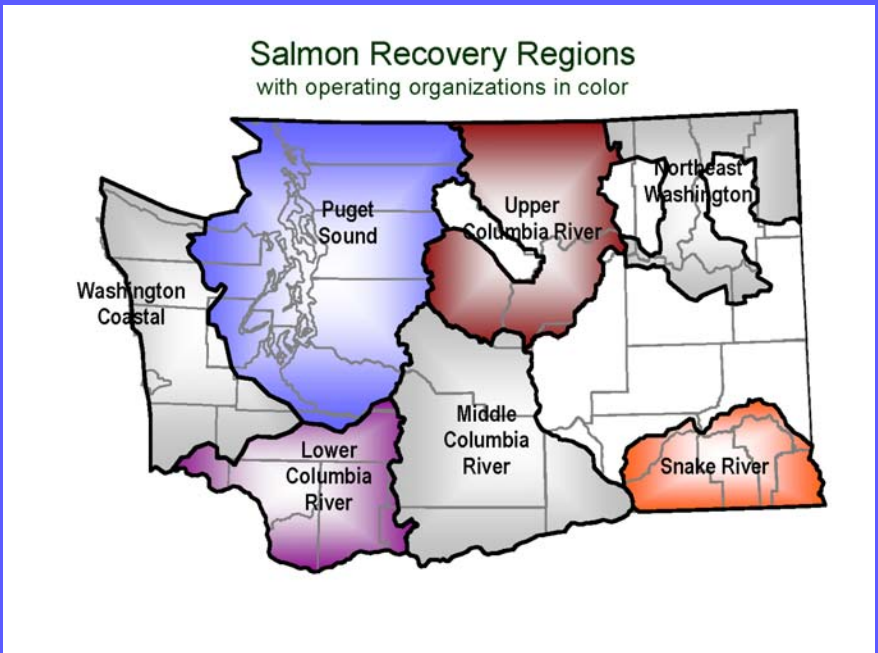
2004 LEAD ENTITY HABITAT PROTECTION & RESTORATION STRATEGY: Snake River Region



Prepared by the
Snake River Salmon Recovery Committee

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DRAFT

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Executive Summary

This document presents a description of the Snake River Region and its history, an assessment of the current habitat conditions, causes for salmonid declines, and a strategic approach at identifying habitat protection and restoration needs in the Region. It is a dynamic document part of an iterative and interactive process that is designed to allow for adaptive management based on new and emerging information. This document is to provide the Salmon Recovery Funding Board and its Technical Review Panel with an understanding of the strategy used to develop the Regional prioritized habitat project list for the Fifth Round 2004 grant process.

More than 20 individuals representing state and federal agencies, tribes, conservation districts, landowners, cities, counties, fisheries enhancement groups, farm bureau, and wheat growers contributed to the development of this Strategy. This document provides a comprehensive look at the habitat related causes for salmonid declines in the region and a description of the conceptual foundation, principles, and actions necessary for habitat protection and restoration at the regional level. The Conservation Commission's Habitat Limiting Factors Assessment (HLFA) reports for both watershed resource inventory areas (WRIA 32 and WRIA 35) were used for much of the region to describe reach by reach, limiting habitat factors in previous versions of this strategy document. Now that the Ecosystem Diagnosis and Treatment assessment work conducted as part of sub-basin planning is complete for many of the sub-basins in the region, new analytical information was used to prioritize reaches and actions based on population viability criteria and potential population performance increases. Other sources of assessment information was used in development of this document, including the Northwest Power and Conservation Council's sub-basin summaries, BPA model watershed plans, and technical representatives from various agencies and tribes provided perspective and guidance in the development of this recovery Strategy.

This Strategy describes the general habitat conditions based on the HLFA assessment and then refines those generalities into specific reaches and habitat attributes that would benefit from restoration or protection activities based on the EDT assessment. This Strategy provides a description of how the public is engaged with the efforts to protect and restore the habitats salmonids are dependent upon. Described is the process that the 17-member committee comprised of technical and citizens representatives (Recovery Committee voting members) used to identify and rank salmonid recovery habitat projects based on EDT or a combination of EDT, existing assessment documents and local technical knowledge. A strategic approach based on potential population productivity performance has been developed to identify and select habitat restoration and protection projects. This Strategy is based off preliminary sub-basin plan assessments and it is anticipated that the strategies described in sub-basin plans will differ slightly from this document. It is important to note that this Strategy is specific to the 5th Round and will likely change in future rounds. Further, this strategy addresses only habitat and it is recognized that a regional recovery plan is being developed that will address the other risk factors, including harvest, hatcheries, and hydropower. Last, there are three Evolutionary Significant Units of salmon and one Bull Trout ESU occurring in the Snake River Lead Entity area; mid-Columbia Steelhead and Snake River steelhead, spring/summer chinook salmon, fall chinook salmon and Columbia River bull trout. Many populations of salmon and bull trout that comprise these ESU's occur outside of our geographic area in Oregon and Idaho. This Strategy focuses on actions to improve habitat conditions on a priority basis for the geographic areas specific to our Snake River Recovery Region, lead entity area and does not incorporate actions and programs for addressing these ESU's outside of our geographic area.

This Strategy presents a tiered approach to prioritizing actions and areas that guides project ranking for SRFB and possibly other funding. By involving diverse technical and landowner/citizen interests, we present an approach to habitat protection and restoration that is sequenced, attainable and sustainable. It is a vision from the grass roots level. We all realize that salmonid and their habitat did not decline overnight and the process for recovery will not be completed any sooner. Lastly, we recognize that salmonid are a key resource in the region and that preserving and protecting them and their habitats will prove beneficial.

1.0 Conditions

1.1 History of the Snake River Region

The original inhabitants of the region included the Cayuse, Palus, Walla Walla, Umatilla and Nez Perce Native American Tribes. Lewis and Clark visited the region in 1805 and it looked different than today. Observations made by U.S. Naval Officer Charles Wilkes who was in command of an exploratory party and was in the Walla Walla valley from July 8 through July 24, 1846. He described a region that had abrupt and rocky hills with a narrow fertile bottom with varying widths of riparian vegetation comprised of shrubs and trees. The trees consisted of cottonwood, willow, birch, and other riparian species including sumac, gooseberry and corn-grasses and rushes. The fertile Walla Walla River bottomland was two to three miles wide with varying amounts of timber. The Walla Walla with its numerous branches could be seen threading its way to the Columbia River.[1]

An excerpt from a scientist in 1916 described a fairly narrow riparian zone along the lower Touchet River, not exceeding a quarter of a mile, but that within the quarter mile wide belt, the cottonwood trees were very large with a height of 80 to 100 feet and trunks four feet in diameter. Under the large trees he reported smaller trees and a heavy growth of shrubby underbrush. He reported that as of 1916, the habitats of animals in the region have been greatly altered by the work of man. Farming had converted much of the land to cultivation. Land not under cultivation had been heavily grazed by cattle and livestock. Part of the timber along the streams had been cut down and much of the brush cleared.

Livestock production, logging, and agriculture occurred in the region beginning in the late 1800's and have all impacted the natural resources of the region. Settlers arrived in the region in large numbers in the 1880's and created a demand for wood. Riparian forests and conifer forests in the Blue Mountains supplied settlers with wood. Logs were commonly yarded across streams, logging roads were built in the riparian area, and stream channels were modified to reduce road construction costs. Cities and towns began appearing in the 1860's. Roads were developed to access rural areas and were usually built in the valley floor along a stream. Streams were modified to facilitate road construction. Bridges were constructed and streams were modified to align with the bridges.

1.2 Physical Characteristics of Snake River Region

The Snake River Region (Region) is comprised of that portion of Washington State that drains into the Snake River and the Walla Walla River basin. Generally the region can be described as the four southeast Washington counties; Asotin, Garfield, Columbia, and Walla Walla. Also included is a portion of Whitman County draining into the Snake River. There are 3,487 square miles in the region and 12 sub-basins, of which 11 support salmonids. Four of the most recognizable sub-basins include the Grande Ronde, Asotin, Tucannon, and the Walla Walla. There are only three cities larger than 10,000 residents: Clarkston, Walla Walla, and College Place. The US Forest Service manages 325,000 acres located in the Blue Mountains, of which 189,000 are wilderness acres. Wilderness areas have protection and management standards that provide protection for critical salmonid habitats in those areas. The Washington State Departments of Natural Resources and Fish and Wildlife manages 25,000 acres of State public lands in the region, generally in the Blue Mountains.

The Region is bordered on the south by the state of Oregon and on the east by Idaho. Most of the southeastern portion of the basin is a mountainous forest area called the Blue Mountains. At their highest point the mountains exceed 6,400 feet. Nearly 189,000 acres in the Blue Mountains have been

[1] Wilkes, C., 1845 Narrative of the United States Exploring Expedition; London, Wiley & Putnam

designated as the Wenaha-Tucannon Wilderness area and is protected from human environmental impacts by federal law. Intermixed with the forest area are large areas of rangeland. Rangeland areas extend along canyon slopes throughout much of the basin.

Agriculture and rangeland dominate the landscape from the foot of the Blue Mountains to the Snake River. Rangeland makes up 30% of the basin and is generally unsuited to cultivation because of steepness of slope, frequent rock outcroppings, shallow soils, and alkaline soils. Rangeland provides important forage for livestock and is vital to various wildlife species. Rangeland quality can substantially impact water quality and quantity. Wheat, peas, blue grass, barley and hay are the primary crops east of Walla Walla. West of Walla Walla, alfalfa hay, onions, asparagus, fruit orchards, and vineyards are the primary irrigated crops.

Mean annual precipitation in the region varies from less than 10 inches per year west of Walla Walla, to more than 70 inches in the Blue Mountains. Ninety percent of the precipitation falls between September 1 and May 1, with 25% of the winter precipitation coming in the form of snow. At lower elevations the maximum summer temperature ranges from 80 F to 95F, but often exceeds 100F every year. Winter temperatures range on average from 30F to 40F.

1.3 Ecological Factors of Snake River Region

Grazing

Deteriorated rangeland conditions today are a result of historic over-stocking and continuous livestock grazing. Much of the rangeland that is in good condition today remains that way due to its steep topography, rockiness, lack of water, or remoteness. Most rangeland with deep soil has been over utilized, which has deteriorated its ecological condition, production capability and has resulted in poor moisture holding capacity and associated accentuations in the hydrograph. Proper range management is emphasized as a priority as opposed to restricting all grazing on private and public lands.

Logging

Timber removal has occurred in the region since the late 1800's and initially occurred in the lower elevation, flatter areas. As timber became scarce, efforts moved further into the mountains and further upslope. Historic logging practices varied from hundreds of acres of clear cuts to smaller sections. Currently, timber harvest removal methods include standards designed to protect critical upland and aquatic habitat. Logging roads used to remove timber in the past are in various state of condition, ranging from properly restored to those in a deteriorated condition. Deteriorated logging roads have contributed to mass wasting, sediment production and delivery, and solar input to adjacent streams. Currently, the density of logging roads in the US Forest Service ranges from less than 1 to more than 6 miles per square mile. The USFS future desired condition prescribes less than an average of 2 lineal miles of logging roads per square mile. Timber harvest regulations on private and public property today are much more rigorous than past regulations at protecting the sensitive aquatic and riparian habitats in the forest.

Agriculture

Dry land farming is the most common farming practice in the region with most of the dry-land production in cereal grains. Until recently, dry-land farming practices included a fall harvest followed by tillage. Fields often lay fallow for one summer after tillage and then are seeded in the fall. While that approach was effective at reducing weeds and retaining soil moisture, considerable soil erosion occurred. Today, a considerable amount of effort has been made to increase cropping intensity and reduce the amount of tillage by employing direct seeding methods.

Irrigated farming occurs primarily along streams and rivers in the region. Corn, alfalfa, grapes, tree fruit, and hay crops are the most common irrigated crops. Wells and surface water is delivered to the fields either by gravity through open ditches, or pumped directly from the rivers or ground.

Development and Roads

There are only three cities with more than 10,000 residents in the region. There are nine state highways with a total length of 297 miles. There are nearly 400 additional miles of paved roads owned by the four counties in the region. Projected population growth and associated development is expected to occur primarily in the Walla Walla basin with most growth expected near the City of Walla Walla.

Recreation

The major recreation activities in the Region include snow skiing, snowmobiling, ATV and motorcycle riding, hunting, fishing, camping, and horse back riding. Concentrated recreation use on public lands in the sensitive riparian area is a concern in the Region because most public land is in the upper reaches of each watershed where all salmonid life cycles occur and needs to be addressed.

1.4 Causes for Salmonid Decline

A combination of habitat factors has contributed to the decline of salmonid populations in the Region over the last 100 years or more. Habitat loss resulting from the straightening of rivers over the last century (dikes, levees, bridges, roads, culverts, channel alignment) fish passage barriers, non-compliant screened diversions, introduction of non-native species, tree removal, floodplain encroachment and filling of floodplain are some of the major causes of the degraded habitat conditions of the region today. Straightened rivers flow faster, become incised and disconnected from the flood plain, have low pool riffle ratio, lack complex habitat, don't dissipate flood energy well, are morphologically unstable and tend to be warmer than natural condition. River straightening occurs as a result of natural occurrences as well as anthropogenic activities. Activities, both active and passive approaches that encourage a meandering stream course are emphasized. Irrigation withdrawals in the Walla Walla basin have resulted in de-watered reaches during the summer months and inadequate flows during the spring and fall for adult salmonids to ascend the stream. An historic fish passage barrier at 9-Mile dam on the lower Walla Walla likely caused the extinction of spring Chinook salmon in the basin. Multiple historic passage barriers on Mill Creek may have had the same affect on steelhead trout in this subbasin.

Recent settlement agreements reached between the irrigation districts and the U.S. Fish and Wildlife Service have partially addressed low stream flows in this reach. Agriculture, grazing, and logging activities over the last 100 years, has resulted in poor soil moisture holding capacity and an accentuated hydrograph, increased sediment delivery, and loss of riparian areas.

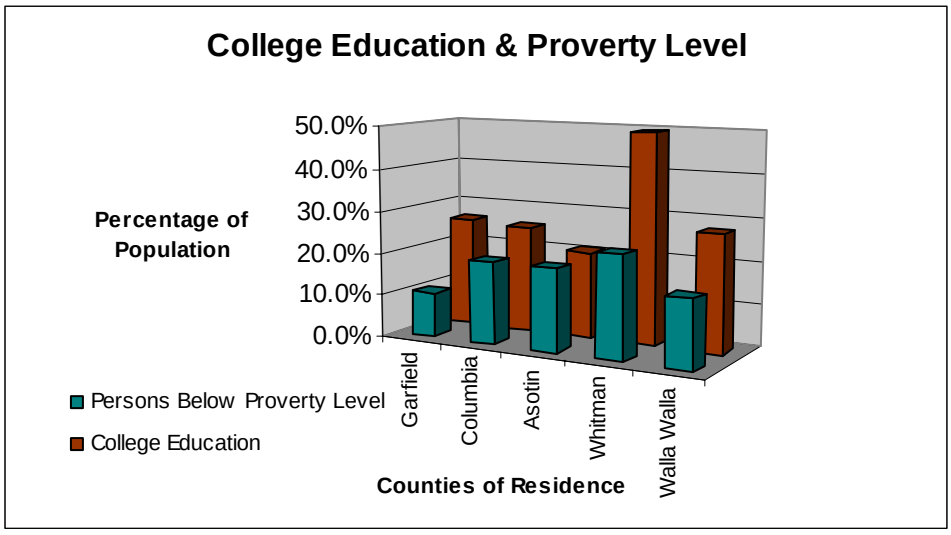
However, impacts from these activities are very slowly being reversed as new regulations and management practices are being implemented. Over the last century, development and road construction in the valley floors has resulted in constrained channels and loss of riparian area. Concentrated recreational activities on public lands in the upper reaches of the rivers has resulted in poor riparian and degraded stream bank conditions. More detailed ecosystem diagnosis and treatment assessments on a Regional basis are now complete as part of the NPCC sub basin planning work for Ten-Mile, Asotin, Almota, Deadman, Tucannon, Walla Walla River, Mill Creek and Touchet River. These EDT assessments along with assessments completed in the sub-basin summaries, habitat limiting factors analysis, watershed plans and other assessments form the technical foundation for guiding the selection of reaches to protect and restore.

2.0 Community Issues

2.1 Social, Cultural and Economic Value

The Snake River Region is made up of five counties that range in population from 52,700 in Walla Walla County to 2,350 in Garfield County. In the larger counties there has been an influx of people relocating from other areas, to a smaller city setting. Walla Walla County is the largest in population and has two 4-year colleges, Whitman College and Walla Walla College and one Community College (WWCC). In Whitman County Washington State University resides, maybe due to this Whitman County has the highest percentage of college-educated people. Even with the arrivals of new community members the cultural fabric of many of these communities is made up of families that are multi-generational occupants of the region.

Exhibit 1: College Education & Poverty Level

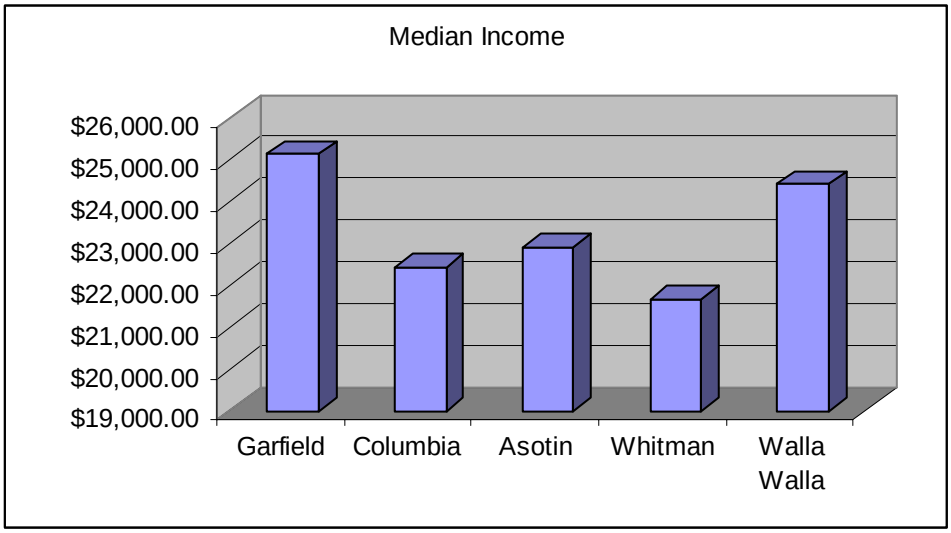


The five counties that make up the Snake River Region are agriculturally based. Much of the cropland is used for the production of grains and legumes. Over the last approximately 40 years, the grain market has remained at price levels that are the same as the 1960's. The mean of the forty preceding years of wheat sales is $2.65 a bushel. Compared to the rate of inflation and pay –scale for other occupations, agricultural occupations have not kept pace. This of course has impacted this area; the results of this situation have shown themselves in many ways. For example, to remain financially viable, producers historically maximized the number of acres they seeded, which resulted in farming of marginally productive soils, encroachment in the channel migration zone and the use of methods that were more economical than conservation-based farming methods. Recent advancements in tillage practices have been implemented because they are more economical but also because they have proven to reduce erosion and sediment delivery to streams. Conservation programs to protect stream margins have been embraced by many producers and have been implemented across the Region

Equipment and chemical costs continue to rise and the producer is always looking for ways to save costs and expand production. The no-till drill (direct seeding) has introduced some savings in that the producer is able to seed, fertilize and pack the seed all in one pass. In a study from Washington State University direct seeding farmers saw their wheat production costs range from $2.52 to $2.92 a bushel cost compared to $2.95 a bushel for a typical convention till budget. This has had value for the producer in reducing the costs to the production of wheat; it has also shown good results with a reduction of silt runoff from fields. Although it would seem intuitive that producers would chose this lower-cost method

of farming, the uncertainty of production has kept many producers from converting to this potentially less-productive method. This is especially true in areas of moderate precipitation, which happens to be where assessments indicate that sediment in streams is a significant limiting factor for salmonid productivity. When agricultural prices are depressed government programs such as CREP, continuous CRP and CRP may provide fiscal incentives to reduce agricultural production acres. The community has supported these conservation programs that allow natural riparian function and fluvial processes to occur but when those processes result in a channel migrating outside of riparian buffers, the citizens of this region support restoring the channel to its pre-disturbance location using practices as permissible by state and federal law.

Exhibit 2: Median Income



Good conservation practices have been encouraged by the county conservation districts for the last 60 years and have generally been embraced and implemented by producers. For instance, grass waterways, water and soil retention ponds, and the use of direct seeding farming practices are widely seen across the region. In recent years the Walla Walla Basin has promoted more wineries and vineyards into the area, which has proven positive for both the economy of the region as well as the aquatic ecology of the region due to decreased water use by grapes compared to irrigated alfalfa, asparagus, onions or other crops.

2.2 Community Project Support and Concern

It is important to recognize the support for salmonid habitat protection and restoration across the Region. Our planning processes, including the lead entity Strategy development, Watershed Plan, Subbasin Planning, Salmon Recovery Planning (under development) and other processes have been developed from the grass roots level with support and input from the citizens and natural resource agency representatives. Actions identified for implementation are clearly on a voluntary basis with the goal being to improve the habitat conditions upon which these species exist. The community values sustainable agriculture that can be maintained in concert with, or improve salmonid habitat. Irrigation practices which maintain the number of irrigated acres yet increases stream flow is a community priority. This type of agriculture can be seen in wine grapes, irrigation circles. Other stream flow enhancement efforts like lining irrigation ditches, by-passing mainstem flows, water acquisition/leasing, and irrigation efficiencies that result in decreased return or infiltration flows have resulted in the drying up of many springs and distributaries in the Walla Walla basin and is a community concern. These projects can be

costly and can are often controversial. Solutions to these two factors may be achieved through collaborative discussions, trade-offs and alternative approaches as well as necessary cost-share programs.

Programs that restore and protect the riparian and channel migration zone are well received by the community but it must be noted that the community is very concerned with a channel that migrates out of its buffer zone.

Dry land agricultural practices that lead to decrease sediment contribution, like direct seeding, chemical fallow or filter strips also receive high community support. These practices, however, cannot be implemented universally across the region for various reasons. The relationships between soil productivity, precipitation (quantity and seasonality), soil moisture holding capacity, and soil type all interact to dictate when and where direct seeding and other conservation practices will be cost-effective as well as environmentally beneficial. In general, direct seeding can be cost-effective in higher precipitation areas but may not be as cost-effective in lower precipitation areas. As a result, cost-share for direct seeding in moderate level precipitation areas is supported by the community.

The community values salmonid and the habitat upon which they depend. Restoring and protecting these habitats are important to the community. However, when salmonid recovery efforts contradict with the economy of the region, the community is concerned. This may happen when land is acquired, water is purchased, tributaries and spring dry up, and when productive agricultural lands are taken out of production. Alternatives to these types of actions are supported, like leasing water for short periods of time, alternative crops that require less water, acquiring conservation easements and implementing conservation practices on productive agricultural lands to keep those acres in production.

3.0 2004 Lead Entity Habitat Protection & Restoration Strategy: Snake River Region

3.1 Lead Entity Habitat Project List Development – 5th Round

The Snake River Salmon Recovery Strategy developed by the Lead Entity Committee, which is comprised of 8 technical representatives 9 landowner representatives, is to provide a regional understanding of the reasons that salmonid habitat is impaired, what caused those impairments, how to restore those habitats and what the future desired condition looks like. This committee's role is to review, score and rank all projects submitted to the Lead Entity. This Committee of 17 people has developed and reviewed project proposals using a set of scorecards developed by the technical and citizen members of the Committee in previous grant rounds. Those scorecards will be used again in the 5th Round for scoring project proposals but this year, the committee will use the SRFB's project benefit and project certainty definitions to provide the SRFB with a review of the projects based on criteria established by the SRFB. This step is independent of the local score card and occurs after the projects are scored based on their technical merits and social acceptance.

The Snake River Salmon Recovery Board, which has a membership of 21 people representing the cities, counties, agriculture, Tribes, environmental community, additional committees include timber interests, federal and state agencies, and other interested or affected people/groups in the Region provides final review of the project list for submittal to the State's Salmon Recovery Funding Board. Currently, the Region relies on a 17-member voting committee comprised of citizens, technical (state and federal representatives) and 6 non-voting conservation districts to represent the diverse interests in the Region. This organizational structure ensures that the technical merit of each project is fully reviewed and commented on by state, tribal, and federal agency representatives, and that the ranked list is supported by the Regional Salmon Recovery Board. The Regional Salmon Recovery Board was created in 2003 for the purpose of over seeing the development of a regional recovery plan. The project list developed by the Lead Entity will be reviewed and endorsed by the Snake River Salmon Recovery Board prior to submittal to the SRFB for funding consideration in July 2004.

3.2. Salmonid Habitat Restoration and Protection Strategy

Concurrent with development of the Committee and regional Salmon Recovery Board, documents containing information on historic condition and land use activities that have occurred over the last century and how those activities impacted salmonid habitat were reviewed and summarized. More recently, we have searched for methods and funding for restoring those habitats to a desired future condition that is supported by all the people in the region. In 2001, the WRIA 32, limiting habitat factors report was completed, providing us with a reach-by-reach assessment of the habitat conditions in all streams in the Walla Walla basin. This document has provided much of the information used to develop the habitat protection and restoration strategy in the Walla Walla basin. The WRIA 35 (Tucannon, Pataha, Asotin, Alpowa, and Grande Ronde, etc) limiting habitat factors report is also complete. Information provided in that report has been incorporated into this strategy. In the fall of 2003 and early winter of 2004, an Ecosystem Diagnosis and Treatment (EDT) assessment was completed for six of the fish producing sub-basins in the Region as part of the Northwest Power & Conservation Council's sub-basin planning effort. This assessment has been used in describing with great specificity the reaches in each sub-basin targeted for restoration activities and those reaches targeted for protection actions. EDT provides three of the four population viability criteria that NOAA Fisheries requires of recovery planning. This Strategy defines reaches to protect and to restore based primarily on the productivity population viability criteria because in basins with critically low populations of salmonid and

steelhead addressing those attributes that are currently limiting survival where the fish already exist is the highest immediate priority. Once those priority habitat areas are made productive either through restoration or protection, our focus will be to work in lower priority areas. Improving conditions priority reaches will increase the population abundance and distribution in the Region. Where distribution of fish into productive habitat can be increased with removal of a fish passage barrier or partial barrier, we prioritize such an action under the imminent threats category and it would be our highest priority.

Myriad funding sources have been and will continue to be targeted to implement our Strategy. Funding sources have specific conditions and constraints, and whenever possible, multiple funding sources are used to implement high priority projects in the region. For example, the Conservation Reserve Enhancement Program (CREP) is currently being used to protect and restore 312.7 miles of stream in the region. Often this program is used independent of other program funds, but occasionally restoration efforts are required as part of the protection project. As an example, a project may include CREP funding for fencing and planting trees in the riparian zone, but due to unstable stream banks, technical representatives suggest that the banks be stabilized with bioengineering techniques to improve in-stream habitat conditions and to prevent channel migration. With the landowner's agreement, the project may request SRFB dollars to implement the in-stream element of the project and rely on CREP to implement the riparian element. The region has used Northwest Power & Conservation Council funds allocated through the BPA Model Watershed Programs for the Tucannon, Pataha and Asotin basins, for restoration and protection projects in those areas. The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) has also obtained funding for several restoration projects and one large (approximately 8,000 acres) acquisition project in the region. In a relatively small reach of the Walla Walla River and Mill Creek low stream flow has resulted in the stranding of juvenile steelhead and bull trout. Efforts to address low flow in those reaches include interim agreements between the Irrigation Districts and USFWS, water acquisitions by the Washington Water Trust and Department of Ecology, irrigation efficiency programs, and other programs.

3.3 Public Involvement

The Conservation Districts in each of the five-county Region have been designated by signature of each of the five county commissioner boards as the lead county representative for salmonid recovery efforts in the Region. Further, the CTUIR and NPT have also endorsed this arrangement. The County Commissioners have notified the public of this arrangement and when interest in salmonid recovery comes before the individual boards, they defer the interested person to the Conservation District or WDFW watershed steward biologist. Public awareness, involvement and participation are reflected in the large number of salmonid and habitat protection and restoration projects implemented in the Region. Project ideas and proposals are solicited by public notification in each of the county's newspapers.

Public meetings and presentations are held several times each year to educate, involve and share information, ideas and concerns with salmonid recovery efforts in the Region. The audiences for these forum's are as diverse as the region itself, including cattleman's groups, wheat growers associations, environmental science classes at the high school and collegiate level, grade school programs including salmonid in the classroom and environmental education centers. In addition to public outreach meetings, the information about the lead entity and the process to submit projects for the fifth round are made available through the Salmon Recovery Board's website at www.snakeriverboard.org.

4.0 Technical Foundation

The completed Conservation Commission Limiting Habitat Factors report for WRIA 32 and WRIA 35 identified limiting factors in every reach of every tributary in the region. In WRIA 32, the most common limiting factors in the 27 reaches of the Walla Walla basin were pool frequency, riparian condition, off-

channel habitat, floodplain connectivity, substrate embeddedness and temperature. In addition to the six ubiquitous limiting factors mentioned, fish passage barriers and unscreened or poorly screened, water withdrawals exist in WRIA 32. In WRIA 35 a total of 27 reaches were also assessed. In those reaches, stream bank condition, substrate embeddedness, riparian condition, pool frequency, pool quality, large woody debris, and temperature were the most common limiting factors. Much like WRIA 32, there are fish passage barriers and unscreened or poorly screened, irrigation withdrawals identified in the limiting factors analysis. Correcting these two limiting factors (imminent threats) are the highest priority actions in both WRIA's.

Regionally, the most common limiting factors are associated with poor riparian and floodplain condition as indicated by warm water temperature, lack of off channel habitat, low pool frequency and poor pool quality, and a lack of large woody debris. Substrate embeddedness attributed to upland activities has resulted in impaired spawning and egg survival. Low stream flows are a limiting factor throughout much of the Walla Walla basin. Unnaturally low stream flows in Mill Creek and the main stem Walla Walla River are attributed to irrigation and municipal withdrawals during the summer.

Appendix 6.1 shows the limiting factors assessment results for each of the rivers in WRIA 32 and WRIA 35. These assessments show that one or more limiting factor exists in every reach in the Region. These assessments don't, however provide an empirical level of impact to fish productivity. Therefore, although useful for general watershed characterization, we include these products as reference and will not rely on them for prioritizing project areas or actions.

Pool frequency, pool quality, water temperature, and large woody debris availability and recruitment can be impacted by activities that reduce channel sinuosity. Channels become less sinuous as encroachment in the floodplain occurs as a result of development, agriculture, and the construction of roadways. Actions associated with maintaining the channel in a straight alignment reduces the opportunity for off-channel habitat to develop and the river to interact with its floodplain. Restoring sinuosity and riparian vegetation, and allowing the river access to its floodplain would address multiple limiting factors in the basin. If these activities are combined with a program to protect the riparian and floodplain improvements, then natural processes will be enhanced. Upland management practices that minimize the amount of sediment produced and delivered to the streams will ultimately result in lower substrate embeddedness.

Projects that emphasize protection of the sensitive riparian zone and in-stream habitat in upper reaches that are in generally better condition than downstream reaches are prioritized over restoration projects in the lower reaches, as these lower reaches are primarily migration corridors where fish spend little time and the magnitude of the factors causing poor habitat conditions in these lower reaches are so geographically large and/or cost-prohibitive to address. For example, sediment in the lower reaches originating from thousands of acres of dry-land farming, road ditches, and county dirt/gravel roads is identified as the most significant limiting factor in the lower Touchet and lower Walla Walla rivers based on the EDT assessment for steelhead. Addressing these sediment sources is a priority due to the potential opportunity for increased productivity in these downstream reaches, however the certainty that addressing this limiting factor alone will provide productive habitat in these downstream reaches is very low and the cost of implementing actions necessary to reduce sediment would be prohibitive. For instance, direct seeding farming or chemical fallow are two dry land farming management strategies to reduce erosion but these methods are only effective where annual precipitation is sufficient to provide enough soil moisture to allow annual cropping. The lower reaches of the Touchet and Walla Walla rivers, i.e., downstream from Bolles Junction near Waitsburg on the Touchet River and downstream from the confluence with Dry Creek on the Walla Walla River, are in a precipitation zone of less than 15 inches per year, which is not enough precipitation to productively annually crop the agriculture ground. The area (acres) of dry land farming that drains into these lower reaches is more than half of the entire

acres in the Snake River Recovery Region. Many of these acres have been enrolled in the Conservation Reserve Program but since the economy of this region is largely dependant upon agricultural and the community values sustainable agriculture, taking these acres out of production would not be supported by the Committee. Conversely, converting these acres to chemical fallow would cost millions of dollars annually. The benefit from funding such management would be financially prohibitive and would address only one of the significant limiting factors in these downstream reaches. Water temperatures below Bolles Junction on the Touchet River and below the confluence of Dry Creek on the Walla Walla River exceed 80 F in the summer (Mendel 2002). Addressing water temperatures in these large downstream reaches will require first addressing water temperatures in adjacent upstream reaches. Currently, our Strategy is to implement actions like CREP in upper and middle elevation areas first where there is currently good to moderate habitat conditions so that the cooler water temperature is maintained and passed downstream. Our Strategy is to protect productive reaches and to restore moderately productive reaches working from upstream to downstream. Our highest priority is to address imminent threats, i.e., fish screens, and fish passage barriers wherever they occur in the Region. Included in imminent threats are stream crossings (fords) in reaches where fish spawning and egg incubation coincide with vehicle use of the ford. Vehicle use of fords when the stream is dry or when spawning and incubation is not occurring, are of concern but are not considered an imminent threat.

Now that EDT has been completed on many of the salmonid bearing streams in the Region, the output has been used to prioritize actions and areas with great specificity. This model assesses the relative importance of individual stream reaches in a watershed in terms of their contributions to fish abundance, productivity, capacity, and life history diversity (collectively known as population performance). EDT uses stream and riparian habitat characteristics to help determine salmonidurvival during each life history stage. EDT can help prioritize stream reaches for preservation and restoration. Reaches are ranked for preservation priorities based on current habitat conditions. High priority preservation reaches, if not further degraded will contribute more to population performance than will reaches with a lower preservation rank. Reaches ranked for restoration priorities are based on comparisons between current and historic habitat conditions. If restored to historic conditions, high priority restoration reaches will contribute more to a population's performance than reaches ranked lower in restoration. It is possible for each reach to be ranked as a high priority for both preservation and restoration. These reaches currently contribute a good deal to population performance, and if restored to near-historic conditions, would contribute more to population performance than other reaches in the basin that could be restored. It is important to note that all reaches are affected by upstream/upslope processes and that habitat condition of a stream reach may be more affected by activities occurring in the watershed than by activities on site. EDT is run for each species individually for both preservation and restoration.

Our *first* priority is to address imminent threats where ever ESA listed species occur. Imminent threats include unscreened or improperly screened water diversions, fish passage barriers, and stream crossings (fords). The *second* priority is to address habitat factors that are currently impacting survival. The approach for prioritizing habitat-related projects was to utilize the EDT products as a primary data source but to also use other sources of assessment, like the habitat limiting factors analysis, sub-basin summaries, watershed plans and local knowledge. The *third* priority is for projects that are not in an EDT-identified priority reach but do contain spawning and/or rearing ESA-listed fish species. Eligibility requirements for third-priority projects are (1) ESA-listed fish must spawn or rear in the project location, (2) the project must address a habitat attribute identified as a limiting factor in one of the following documents: Sub-basin Summary, Habitat Limiting Factors Analysis, Watershed Plan, or Model Watershed Plan. Clearly projects in this third-priority category are important but in an effort to provide specificity and focus to project actions and locations, they will receive fewer points in the ranking process.

The protocol for defining prioritized reaches, targeted life stage to affect, habitat attributes to address and actions to implement in each reach based on EDT products is described. The conversion from EDT ladder diagrams and associated files was unbiased and is intended to be entirely transparent. The Implementation Actions that are presented flow logically from the information but are based upon the resources, information, knowledge, and acceptability of the proposed actions. Alternative actions may be available but are either in the experimental form, are locally unacceptable or are cost-prohibitive.

It is well accepted that EDT products do not always align with existing assessment documents, or are occasionally inconsistent with existing empirical data. Where existing differences occur, an explanation of their divergence is explained and rationale provided for utilizing alternative data than EDT.

Exhibits 4 (WRIA 32) and 5 (WRIA 35) show the fish bearing streams highlighted in blue and priority reaches to protect and to restore shown in red. The Ecosystem Diagnosis and Treatment model (EDT) output for geographic reaches in the six watersheds assessed showed a high degree of overlap between reaches to protect and those to restore. Therefore, the maps do not differentiate between reaches to restore and those to protect because of the high degree of overlap for these action types. The maps show priority areas to conduct both restoration and protection actions as the same color. Further, with review from the technical committee members, it was agreed that since there was considerable overlap between spring Chinook salmon and steelhead trout reaches to protect and to restore, that the map is inclusive for both species. Those rivers/reaches with a high recovery potential based on productivity should be targeted for active restoration and protection.

The maps show priority areas for protection and restoration but they do not define the impaired habitat attributes in those reaches. To guide appropriate habitat actions in the priority reaches we reviewed the EDT reach analysis for each of these reaches to determine which life stage is currently the most impacted (life stage impact) and which habitat attribute(s) is most impaired for each life state at each reach. The life stages were ranked based on life stage impact and then listed in the tables. The three life stages that are the most impacted, associated level of impact to each life stage and the habitat attribute(s) impairing survival actions were then compiled for each priority reach and are presented in Appendix 6.3. An exhaustive list of potential actions (projects) to address those impaired habitat attributes was not developed because a prescriptive list of actions inhibits creativity and may limit the use of new technology or fund sources. This approach is identical to the subbasin planning approach, which is to use working hypothesis (sediment reduction in reach A will increase survival of life stages X and Y) and then allow project sponsors to describe how their project (actions) will address the objective.

Appendix 6.3 is based purely on the EDT reach-analysis and do not incorporate other assessments or local knowledge. The information is extremely useful for prioritizing where work needs to be done and what actions should be implemented based on the contribution to the populations performance. This assessment provides a strategic approach at addressing population productivity, which is a key population viability criterion.

Rivers/reaches with a low recovery potential or low contribution to the population performance should be protected by shorelines development regulations or programs designed to protect the stream and riparian zone, and allowed to heal while suffering no further degradation.

For the purposes of this Strategy, protection is defined as any ordinance, contract, or project that significantly reduces the amount of disturbance in the riparian zone. The types of projects used to protect the riparian zone are CREP, riparian buffers, conservation easement, land acquisition, and flow restoration. Upland best management projects protect the aquatic habitat of invertebrates and fish by reducing the amount of sediment that enters a river/reach.

Restoration is defined as any activity that restores future desired habitat conditions, either in-stream, riparian or upland (sediment production and delivery). Table 1 provides a list of activities and assumptions linked to projects that protect and restore watershed conditions.

Table 1: Actions and assumptions for protection projects and for restoration projects.

Protection	Activity	Assumption
	• Riparian Buffers • Land Acquisition • Land Use Ordinance/Regulations • Conservation Easement • Fish Screens • Regulations	Riparian buffers, like CREP protect the riparian zone and channel migration zone from disturbance for at least 15 years Land Acquisition, Land Use Ordinances and Conservation Easements adjacent to rivers protects the riparian zone and channel migration zone indefinitely and these reaches are low priority for funding further protection activities Fish Screens protect fish from irrigation withdrawals
Restoration	**Activity**	**Assumption**
	• Flow Enhancement • Riparian Buffer • In-stream Habitat • Fish Passage Barrier Removal • Levee set-back • Upland BMP	Flow enhancement increases habitat quantity and quality CREP plantings restore the riparian zone In-stream habitat improves habitat quantity and quality Fish passage barrier removal opens useable habitat and increases fish distribution Upland BMP's protect the stream from further sediment delivery

Exhibit 3: Snake River Region

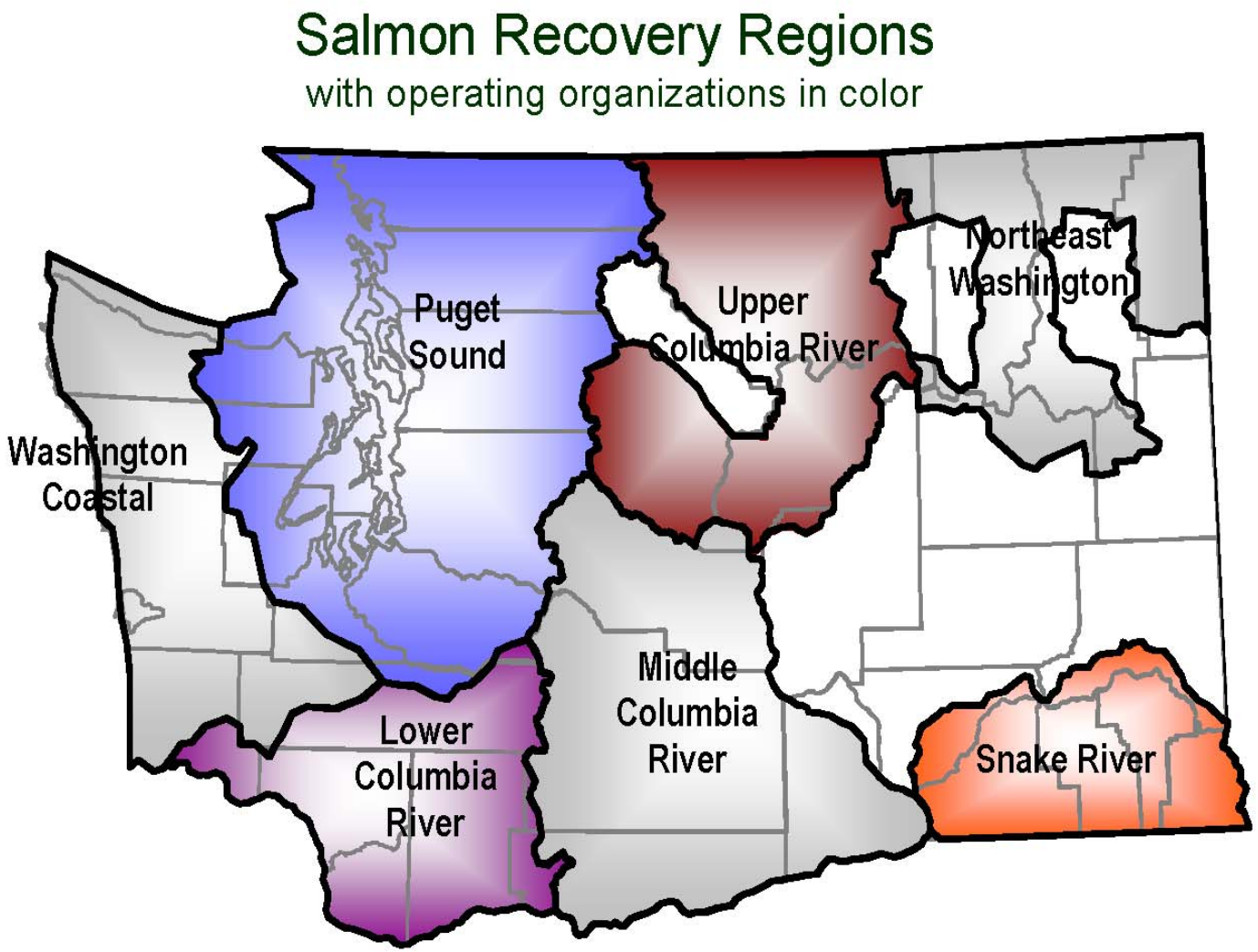


Exhibit 4: WRIA 32 EDT priority steelhead protection and restoration reaches

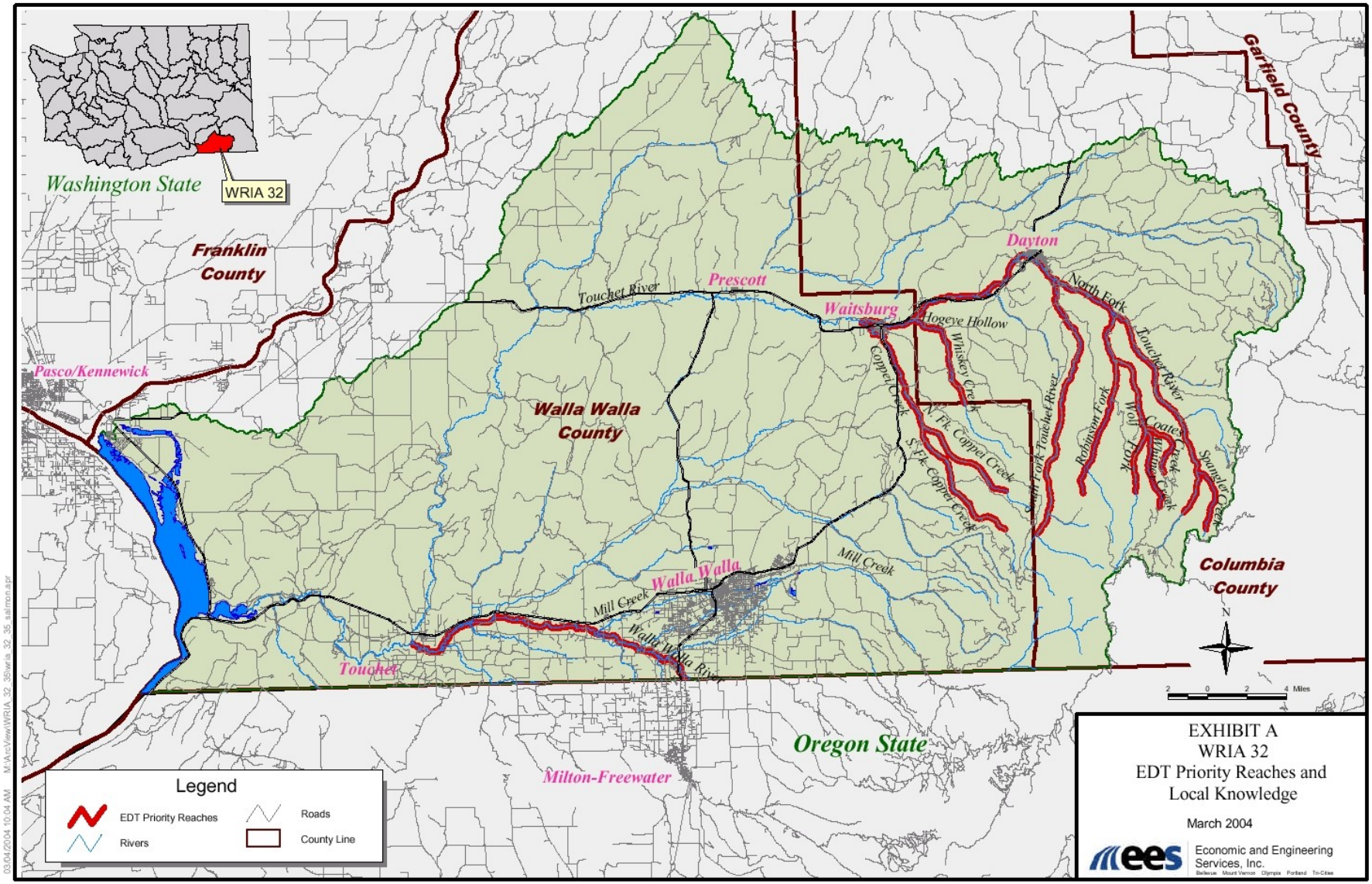
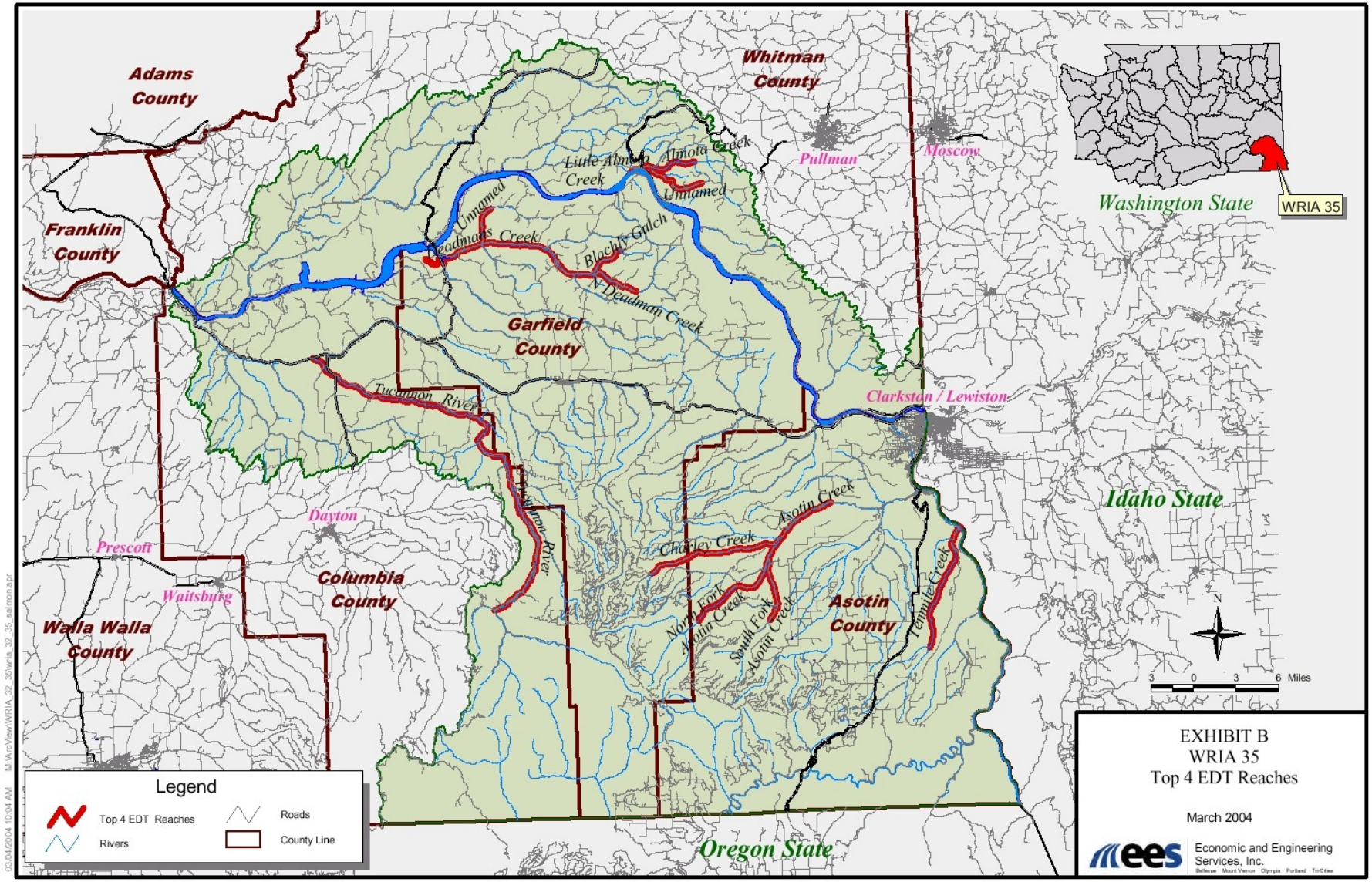


Exhibit 5: WRIA 35 EDT priority protection and restoration reaches for Spring Chinook Salmon and Steelhead Trout



4.1. Guide to Lead Entity Strategies, October 2003

The October 2003 Guide to Lead Entity Strategy strongly suggested that Lead Entities develop a habitat protection and restoration Strategy that is more focused and provides greater specificity than previous Strategies. The Strategy should provide an approach to how, where and when to take actions to restore and protect habitat and the watershed processes that are necessary to support salmonid It should take into consideration current knowledge and understanding of biological, physical, chemical, and ecological factors as well as community social, economic and cultural values and goals. The Strategy should provide guidance for specific actions and areas.

For the Fifth Round, we have established an approach that identifies where and what to do immediately (imminent threats), secondarily (habitat in priority areas), and then over time (non-priority areas). The logic path is to work aggressively to immediately address imminent threats and then to address habitat processes and function in high priority areas; if constraints exist to implement projects in those first two priorities, projects in the third category may become a priority for the fifth round. This prioritization path is based on science but also recognizes that limitations exist, either monetary, personnel, or willingness of landowners to work only in the top two categories.

This year's Strategy focused on the four Technical Foundation questions presented in the October 2003 Strategy Guidelines document developed by the Interagency Committee on behalf of the Salmon Recovery Funding Board. The Technical Foundation has four key elements (1) Identification of stocks and their status (2) Prioritizing stocks and establishing goals, (3) Determining limiting habitat features and watershed processes, and (4) Determining measures to improve targeted stocks.

Our response to the first two elements has been and continues to be that all ESA-listed stocks are our highest priority. In the Snake River Region, there are five stocks of ESA-listed salmonids that spawn and rear. These include Snake River spring/summer Chinook salmon, Snake River fall Chinook salmon, Mid-Columbia Steelhead trout, Snake River steelhead trout and many distinct populations of bull trout, which we consider one stock for the purposes of this Strategy. Our immediate goals for each of these five stocks are to (1) increase spatial distribution by removal of fish passage barriers and screens (2) improve productivity through efforts to improve habitat conditions, which will increase the long-term abundance and overall genetic health of these stocks.

To address elements three and four, we relied heavily on EDT products. As described earlier, EDT generates reach-specific analysis of current habitat conditions and models the impact to each life stage of fish based on deviations from historic (template) conditions. This assessment allowed us to determine which habitat features were most responsible for poor population viability. A determination of the primary underlying causes was made by convening a meeting of local technical experts to discuss the factors causing the impairments to habitat features. We then prioritized actions and areas based on the highest impacts (locations and actions) to population productivity. Unfortunately, EDT was not modeled in every sub-basin. Further, EDT is a purely analytical model that does not account for the likelihood of achieving normative or template conditions. For example, in the Walla Walla River the EDT model showed that the highest priority area is below the Touchet River and that the highest impact to survival was habitat diversity. Habitat diversity includes features like floodplain access and in-channel large woody debris and future recruitment. This reach of the Walla Walla River has been severely straightened and has since become incised. To return the Walla Walla River to its floodplain will require restoring sinuosity, which will result in the loss of highly important crops. The likelihood of achieving this habitat action is very low and very costly, furthermore, this lower reach of the Walla Walla River is not a spawning or rearing reach currently or possibly even historically, so the overall population improvement by addressing this very costly reach, was weighed against the benefit and a determination was made to remove this reach from the current list of priority reaches.

As stated our *first* priority is eminent threats in priority areas and/or habitat restoration and protection projects in the priority areas followed by the *second* priority which eminent threats in non-priority areas but that do contain ESA-listed species. Our *third* priority is for projects that are not in an EDT-identified priority reach but do contain spawning and/or rearing ESA-listed fish species. Eligibility requirements for third-priority projects are (1) ESA-listed fish must spawn or rear in the project location, (2) the project must address a habitat attribute identified as a limiting factor in one of the following documents: Sub-basin Summary, Habitat Limiting Factors Analysis, Watershed Plan, or Model Watershed Plan. Clearly projects in this third-priority category are important but in an effort to provide specificity and focus to project actions and locations, they will receive fewer points in the ranking process.

The Lead Entity Strategy Guide document also suggested that each Strategy identify top tier areas and actions. The information provided in Appendix 6.3., titled EDT Ranking for Reaches and Restoration Actions provides the top areas (reaches) habitat attribute to address and the potential increase in production by addressing those attributes. The actions vary widely but in general, upland best management practices (direct seeding, grass waterways, sediment ponds, etc) address sediment reduction. Riparian projects (CREP, riparian buffers, conservation easements, etc) address bank stability, water temperature, sinuosity, sediment delivery, and large woody debris recruitment. Instream habitat projects (engineered log jams, rock structures, large woody debris placement, etc) address habitat diversity, key habitat quantity and bank stability. Specific actions are unique to nearly every application and developing an exhaustive list would be prohibitive and prescriptive.

5.0 Lead Entity Process

The Lead Entity established a process and calendar of events to help interested parties, committee members and potential project sponsors develop an understanding of the process and timeline. Exhibit 6: illustrates the process and timeline for the 5th Round Lead Entity Habitat Protection and Restoration Project List Development for the Salmon Recovery Funding Board.

In this Round, applicants will complete a project application and submit it to the co-lead entity representing the county where the project is located. The co-lead will review the application and discuss it with the technical and citizens' committee member to get a general sense of technical and community support. If the project appears sound, the sponsor will complete a project application and submit it to the co-lead entity by June 1st. The Committees will convene and review all applications in early June to provide technical and community value comments to the sponsor. This is the fix-it-loop that allows sponsors the opportunity to address technical and social concerns before entering into the onerous, lengthy and uncertain project review, scoring, ranking and assessment of the benefit and certainty. Final project applications are due in late June. Near the end of June a meeting will be held to conduct the final scoring, ranking, and assessment of benefit and certainty. The project list will be submitted to the SRFB at the end of June.

Project Identification, Selection, and Benefit & Certainty Rating

Technical agency staff, citizens, tribal representatives, conservation districts, and citizens familiar with the watersheds and limiting factors for salmonid recovery identify potential projects. Through the efforts to involve landowners and citizens in the salmonid recovery effort in the region, there is a general understanding of what the symptoms and problems are as they relate to the aquatic, riparian and floodplain. Further, these same stakeholders are also familiar with what the future desired condition looks like, i.e., wide riparian and channel migration zone, soils that retain moisture and are less erode able, properly screened irrigation diversions, large woody debris and future recruitment potential, etc . Armed with that knowledge, citizens and landowners have the ability to recognize impaired sites and suggest projects that will address the symptoms in some cases, but to a larger extent the problems that have led to dysfunctional watershed processes. Similarly, technical agency representatives who have an understanding of the desired future condition can also suggest projects to committee members. Lastly and most importantly is the identification of projects recognized in the EDT analysis, HLFA, sub-basin summaries and watershed assessment documents.

A tiered approach at project prioritization is presented in Table 2. This approach has at its highest tier projects in the priority reaches that address the habitat attributes listed as those that most impact survival for the top four life stages. In the top tier are also projects that address imminent threats throughout the region. The second tier is for projects that address an imminent threat in an area outside of the priority areas. Tier three is for projects that address a habitat attribute that is impacting survival but is not in the priority area.

Exhibit 6: Process Timeline for 5th Round L.E. Habitat Protection and Restoration Project List Development

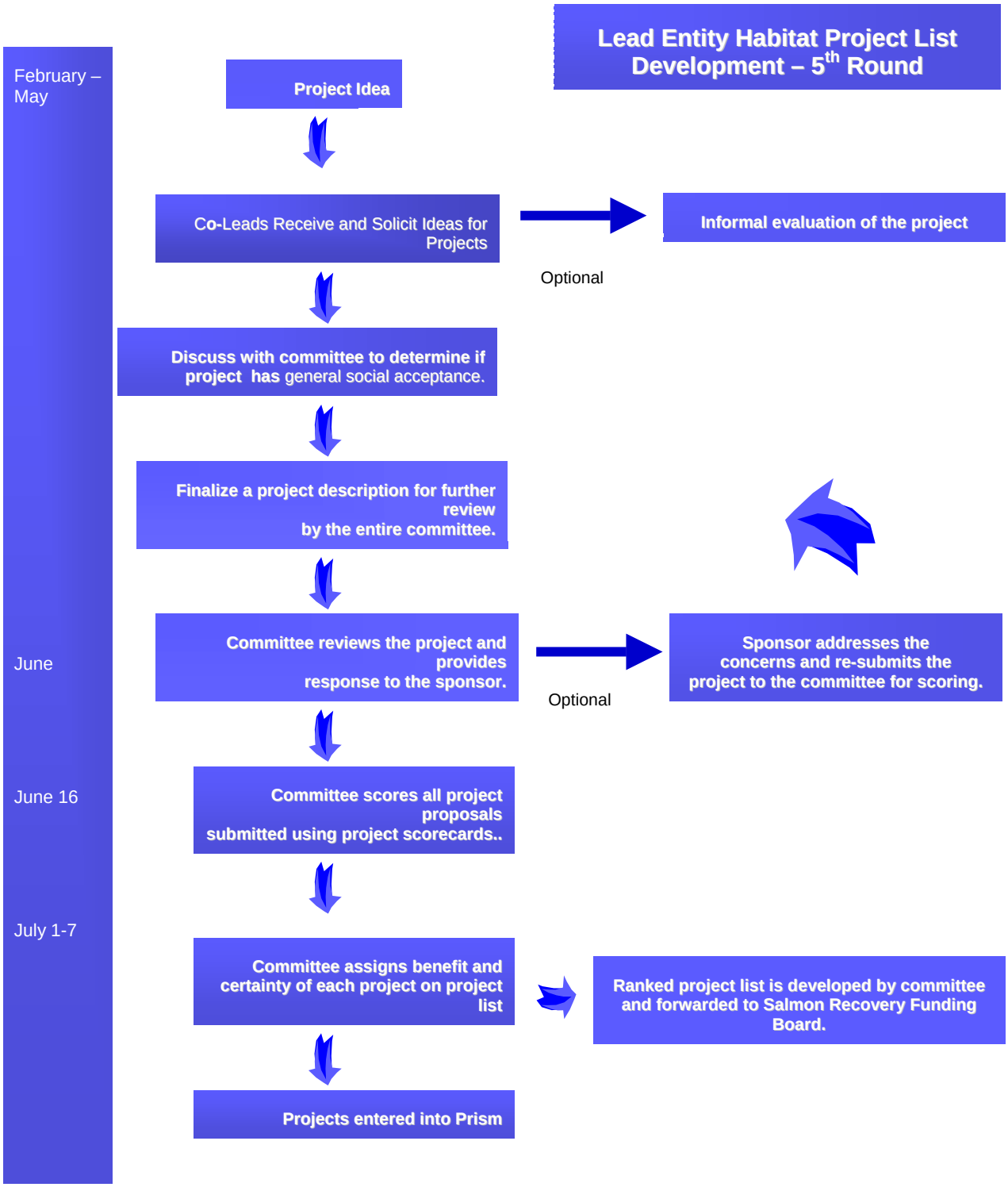


Table 2: Tiered Approach at Project Prioritization for the 5th Round.

Project Tier	Points Possible	Description of Project Parameters
Tier I	Points 5	Habitat Projects in a priority area that address one or more of the habitat attributes for one of the top four life stages listed in Appendix 7.3 Table 7.3-1 Project that addresses an imminent threat in a priority area
Tier II	Points 3	Project that addresses an imminent threat in an area outside of the priority areas
Tier III	Points 0	Habitat protection or restoration project in a reach with ESA-listed species spawning or rearing but is outside of the priority areas

In previous Rounds project selection occurred in several steps. Those steps were to 1) gain general informal support for a project by the technical representatives, 2) discuss the project with members of the committee to determine if the project has general social acceptance, 3) complete a project description for further review by the entire committee, 4) review the project by the committee and provide response to the sponsor, 5) sponsor addresses the concerns and re-submits the project to the committee for scoring, 6) committee scores all project proposals submitted using project scorecards and the 7) ranked project list is developed by committee and forwarded to SRFB. In this round an additional step has been added. This new step is for the committee to rate each project on the ranked project list for their benefit & certainty using the SRFB High-Medium-Low criteria for each project type.

Table 3: Project Benefit Definition

Evaluators will rate each project for its benefits to salmonid and the habitat and ecosystem function on which they depend. The three levels of benefit are based on the project's location as it relates to priority areas; fish health and stock status; fish productivity; life stage; number of fish species; habitat conditions; watershed forming processes and cost effectiveness.

Identified & Prioritized in the Strategy	Watershed Processes & Habitat Features	Areas and Actions	Scientific	Species	Life History	Costs
High Benefit Project						
Restoration	Addresses significant habitat features and/or watershed process	High Priority Geographic Area	Scientific Identification	Multiple Species or Unique Populations Documentation	Important Life Histories	Benefit/Cost Ratio High
Acquisition	60%+ : total project area is intact 60%-:must include restoration					
Assessment	Crucial to understanding watershed process.	Fills important data gap				
Medium Benefit Project						
Restoration	May not address the most important limiting factor but will improve habitat.	Medium Priority Geographic Area	Scientific Identification	Moderate Species or Unique Populations Documentation	Moderate Life Histories	Benefit/Cost Ratio Medium
Acquisition	40-60%+ : total project area is intact 40-60%-:must include restoration					
Assessment	Will lead to new projects.	Fills important data gap				
Low Benefit Project						
Restoration	Does not address an important habitat condition in the area..	Low Priority Geographic Area	No identification	Single Species No Documentation	Unclear the Life History Being Addressed.	Benefit/Cost Ratio Low
Acquisition	None					
Assessment	None					

Table 4: Project Certainty Definition

In addition to the level of benefit, the evaluators will assess the certainty that a proposed project will accomplish its stated benefits for fish. This determination is based on the Panel's understanding of the project location, the current habitat conditions in the area, the habitat forming processes that are taking place, the degree of anticipated historical function protected or restored, the success of similar projects, the likelihood stated benefits will be achieved (note" if benefits are overstated then likelihood of achieving benefits is low), methodology selected is correct for the anticipated outcome, and the extent and potential for threat to habitat conditions if project is not accomplished.

Identified & Prioritized in the Strategy	Appropriate	Approach	Sequence	Threat	Stewardship	Landowner	Implementation
High Certainty Project							
Restoration	Scope is appropriate to meet its goals and objectives.	Is consistent with proven scientific methods.	Correct sequence and independent of other actions	Addresses high potential threat to salmonid habitat.	Clearly described and funds stewardship in the area or facility for more than 10 years.	Willingness on the landowners part to have the work done.	Actions are scheduled, funded with no known constraints.
Assessment		Methodology addresses information/data gap.					
Medium Certainty Project							
Restoration	Is moderately appropriate to meet its goals and objectives.	Uses scientific methods that may have been tested but are incomplete.	Is dependent on other actions taking place.	Addresses a moderate potential threat to salmonid habitat.	Clearly described but does not fund stewardship in the area or facility for more than 10 years.	Landowner has been contacted and will likely allow the work to be done.	Has few or no know constraints.
Assessment		Methods will effectively address an information/data gap.					
Low Certainty Project							
Restoration	Unclear how the goals and objective wil be met.	Uses methods that have not be tested.	Wrong sequence.	Low potential threat to salmonid populations.	Does not describe or fund stewardship of the area or facility.	Landowner willingness is unknown.	Actions are unscheduled, unfunded and not ready to take place
Assessment		None					

5.1 Project Types

The Committee recognizes that discrete project types occur in the region. And that ranking discrete projects of the same type against one another would be easy, but that ranking projects of different types against one another would be difficult. For example, two proposed riparian projects could be compared against each other, scored and then ranked. The higher ranking of the two projects would be the one that is larger in size, has a longer contract, and is located in a reach with more ESA listed species than the other project. Comparing a riparian project with a water conservation project, however, would be quite difficult. For this reason, the committee developed scorecards for 5 discrete project types and then a comprehensive matrix to synthesize information about each project and produce a ranked list based on points. The five discrete project types are 1) riparian, 2) in-stream, 3) upland, 4) water conservation and 5) studies and assessments and are further defined in Appendix 7.5.

Levee set-back projects do not conveniently fit into one of the five types but are intended to:

1. Increase stream length.
2. Increase sinuosity and bank stability
3. Allow floodplain access
4. Improve riparian condition

Riparian projects generally include re-vegetation, fencing, and an easement or agreement that the landowner will not disturb the riparian area. These projects are generally funded by the Conservation Reserve Enhancement Program or with a combination of CREP and SRFB funding. In-stream habitat projects are generally constructed to produce pool habitat or complex habitat for juvenile salmonid. They also may be used to stabilize eroding banks so that vegetation can be established. Upland projects consist of direct seeding, grass waterways, sediment ponds or other upland projects aimed at reducing soil erosion and increasing the moisture holding capacity of the uplands. Water conservation projects include the purchase of water rights or leasing water rights. This project type also includes water delivery and on-farm conservation projects. The last project type, studies and assessments, are aimed at providing information that will lead to a project. For example, there may be a fish passage barrier in a stream that may or may not contain salmonids. An appropriate study and assessment project would be to conduct surveys in the stream below the barrier to determine if salmonids are present and if so if the barrier truly restricts fish passage. If so that a project to remove the barrier would be appropriate. The committee has developed conditions that each project must meet before being scored as well as the assumed benefits of implementing each project type:

5.2 Scorecards and Regional Comprehensive Scoring Matrix

After each project is assigned to one of the three tiers shown in Table 2, the individual projects are evaluated and assigned points based on their location, geographic size, term, number of limiting factors addressed, they are carried forward to the comprehensive scoring matrix. The comprehensive scoring matrix was designed to allow comparison of the discrete project types to one another. Simply put, it is designed to take a mixture of project types (upland, in-stream, riparian, water conservation and assessments) that have been individually ranked and compare them against each other to arrive at a final ranking of projects within the Snake River Salmon Recovery Region for funding consideration by the Salmon Recovery Funding Board. Third, the projects in Tier I receive an additional 5 points because they are in the highest priority areas and address one or more habitat attributes impacting survival. Projects in Tier II receive an additional 3 points because they address an imminent threat. The projects are then ranked based on total points. Projects on the final ranked list are then assigned a benefit and certainty rating of High, Medium or Low based on SRFB definitions.

The intent of this three-step process is to maintain the integrity of scores that each project earns, build upon technical scores giving points for project size, relationship to other projects, project longevity, the number of listed species that will benefit from the project, and the number of limiting factors the project addresses recognizing that specific projects may rank well within their category but they may not be the best project for the region, and then adding points for projects that are in the priority areas and address a habitat attributed for one of the top four life stages. This is somewhat redundant because those same factors were included in the individual project ranking process, however, the comprehensive scoring matrix takes a look at the projects from a regional viewpoint and assigns additional technical points to projects that are strategic (addresses multiple limiting factors, large, and long-lived). Community support for salmonid recovery projects is a vital element of our success and it is recognized that some projects may be controversial and not supported by the community. For this reason we have provided an opportunity for the Committee to re-rank the project list based upon the support for, or opposition to each project. This occurs by vote. Any Committee member may express a concern either for or against any project and then the Committee votes to move a project either higher or lower on the list based on a required super-majority vote.

Typically projects proposed for funding contain several elements, like in-stream and riparian, or upland and riparian enhancement. Occasionally, projects contain in-stream habitat, fish screens, water conservation practices, and riparian re-vegetation. These comprehensive projects are looked upon favorably because they address multiple factors currently limiting salmonid production in the Snake River region. For this reason, the individual project ranking criteria and scores contain point categories for "other project benefits". This lengthy process is somewhat onerous on project sponsors but we believe that it is equitable and allows funding agencies the opportunity to see the process that we have gone through to arrive at a comprehensive, ranked project list.

6.0 Summary

Upland, riparian and in-stream habitat conditions have been drastically changed over the last century largely due to development, timber harvest, road construction, livestock grazing, recreation, and agricultural activities. The uplands have lost their ability to hold moisture, large trees have been removed from the forest and forest roads contribute sediment, roads and cities have infringed on the riparian area and have resulted in rivers that are much straighter than historically. Insufficient stream flows have left river sections too warm for salmonid use, and floods have forced people to fear complex habitats instream habitats.

Our Strategy contains five key elements 1) a technical understanding of the current habitat conditions in the Region, 2) a committee representing all stakeholders in the region, 3) proposed habitat preservation and restoration projects based primarily on the population viability criteria productivity from EDT across the region, 4) a ranked project list using objective scorecards, priority areas and priority actions and 5) a final prioritized habitat project list that is supported by a well-educated public and is consistent with the habitat needs of salmonids in the Region.

7.0 Appendices

7.1 Riparian Habitat Assessment Matrix

Table 7.1-1: HABITAT ASSESSMENT MATRIX – SNAKE RIVER TRIBUTARIES

	HABITAT FORMING PROCESSES			RIPARIAN, FLOODPLAIN AND IN-STREAM CHARACTERISTICS							UPLAND	OTHER		
	STREAM BANK CONDITION	ARTIFICIAL CHANNEL CONSTRAINT	WIDTH/DEPTH RATIO	FLOODPLAIN CONNECTIVITY	IN-STREAM LWD	POOL QUANTITY	POOL QUALITY	OFF CHANNEL HABITAT	WATER TEMP.	RIPARIAN CONDITION	SUBSTRATE EMBED.	SCREENS & DIVERSIONS	DEWATER AND LOW FLOW	FISH PASSAGE
	ASOTIN BASIN AND OTHER PROXIMAL SUB-BASINS													
Mouth to George Creek	●	●	●	●	●	●	●	●	●	●	◒	DG	◒	○
George Creek to N/S Forks	○	●	◒	●	◒	○	●	◒	◒	●	○	DG	○	◒
North Fork	◒	○	○	○	○	◒	◒	◒	○	◒	○	DG	○	○
South Fork	◒	○	○	◒	◒	◒	●	◒	◒	◒	○	DG	◒	○
Charley Creek	◒	◒	○	●	◒	◒	●	●	○	◒	◒	DG	○	○
George Creek	◒	◒	●	○	●	●	●	○	◒	◒	◒	DG	◒	◒
Pintler Creek	◒	○	◒	○	◒	◒	◒	●	●	◒	●	DG	○	○
Ten Mile Creek	●	◒	●	◒	●	●	●	◒	●	●	●	DG	●	●
Couse Creek	◒	◒	◒	◒	●	●	●	●	●	◒	●	DG	●	●
Alpowa Creek	◒	●	◒	◒	●	●	●	●	●	◒	●	DG	◒	○
Grande Ronde River	●	○	◒	◒	●	●	●	◒	●	●	●	DG	◒	○
Grande Ronde Tributaries	○	●	●	●	○	●	○	○	◒	◒	○	DG	○	◒
Wenaha River tribs	○	○	○	○	○	●	○	◒	◒	◒	◒	DG	○	○

○ General Habitat Condition is good (properly functioning)

◒ General Habitat Condition is fair (at-risk)

● General Habitat Condition is poor (not properly functioning)

Table 7.1-2: HABITAT ASSESSMENT MATRIX – SNAKE RIVER TRIBUTARIES (continued)

	HABITAT FORMING PROCESSES			RIPARIAN, FLOODPLAIN AND IN-STREAM CHARACTERISTICS						UPLAND		OTHER		
	STREAM BANK CONDITION	ARTIFICIAL CHANNEL CONSTRAINT	WIDTH/DEPTH RATIO	FLOODPLAIN CONNECTIVITY	IN-STREAM LWD	POOL QUANTITY	POOL QUALITY	OFF CHANNEL HABITAT	WATER TEMP.	RIPARIAN CONDITION	SUBSTRATE EMBED.	SCREENS & DIVERSIONS	DEWATER AND LOW FLOW	FISH PASSAGE
	TUCANNON BASIN AND OTHER PROXIMAL SUB-BASINS													
Tucannon R. Mouth to Hwy 12	●	●	◒	●	●	●	●	●	●	●	●	DG	○	◒
Tucannon R. Hwy 12 to Marengo	●	●	◒	●	●	●	●	●	◒	●	○	DG	○	◒
Marengo to Panjab	◒	●	○	◒	○	●	●	◒	◒	◒	◒	DG	○	○
Panjab to Headwater	◒	○	○	○	○	◒	◒	◒	○	○	○	DG	○	○
Pataha Cr mouth to Columbia Center	●	●	◒	◒	●	◒	●	●	●	●	●	DG	●	●
Columbia Center to Headwater	●	●	○	◒	◒	◒	●	●	◒	◒	●	DG	◒	●
Deadman Creek	●	○	○	●	●	●	●	◒	●	●	●	DG	◒	●
Meadow Creek	●	○	◒	●	●	●	●	●	◒	●	●	DG	●	●

○ General Habitat Condition is good (properly functioning)

◒ General Habitat Condition is fair (at-risk)

● General Habitat Condition is poor (not properly functioning)

Table 7.1-3: HABITAT ASSESSMENT MATRIX – SNAKE RIVER TRIBUTARIES (continued)

	HABITAT FORMING PROCESSES			RIPARIAN, FLOODPLAIN AND IN-STREAM CHARACTERISTICS							UPLAND	OTHER		
	STREAM BANK CONDITION	ARTIFICIAL CHANNEL CONSTRAINT	WIDTH/DEPTH RATIO	FLOODPLAIN CONNECTIVITY	IN-STREAM LWD	POOL QUANTITY	POOL QUALITY	OFF CHANNEL HABITAT	WATERTEMP.	RIPARIAN CONDITION	SUBSTRATE EMBED.	SCREENS & DIVERSIONS	DEWATER AND LOW FLOW	FISH PASSAGE
WALLA WALLA BASIN AND OTHER PROXIMAL SUB-BASINS														
Walla Walla mouth to McDonald Rd	◒	◒	◒	●	●	●	●	●	●	●	●	●	●	◒
Walla Walla-Mcdonald Rd to tateline	◒	◒	◒	●	●	●	◒	●	●	●	◒	●	●	◒
Pine and Mud Creeks	○	◒	◒	●	●	○	◒	●	●	●	●	●	●	●
Dry Creek:mouth to Smith Rd	◒	◒	◒	●	●	●	●	●	●	●	●	●	◒ R	◒
Dry Cr. Smith rd to headwater	○	◒	◒	◒	◒	◒	◒	◒	◒	◒	●	●	◒	●
Mill Cr- mouth to Intake Dam	◒	●	●	●	●	●	●	●	●	●	●	●	●	●
Mill Creek above Intake Adam	◒	◒	◒	◒	●	●	◒	○	○	○	○	◒	○ r	◒
Yellowhask and Garrison Cr.	●	◒	○	●	●	●	◒	●	●	●	●	●	●	●
Cottonwood, Russell and Reser Cr	●	●	●	●	●	●	●	●	●	●	●	●	●	●

○ General Habitat Condition is good (properly functioning)

◒ General Habitat Condition is fair (at-risk)

● General Habitat Condition is poor (not properly functioning)

Table 7.1-4: HABITAT ASSESSMENT MATRIX – SNAKE RIVER TRIBUTARIES (continued)

	HABITAT FORMING PROCESSES			RIPARIAN, FLOODPLAIN AND IN-STREAM CHARACTERISTICS							UPLAND	OTHER		
	STREAM BANK CONDITION	ARTIFICIAL CHANNEL CONSTRAINT	WIDTH/DEPTH RATIO	FLOODPLAIN CONNECTIVITY	IN-STREAM LWD	POOL QUANTITY	POOL QUALITY	OFF CHANNEL HABITAT	WATER TEMP.	RIPARIAN CONDITION	SUBSTRATE EMBED.	SCREENS & DIVERSIONS	DEWATER AND LOW FLOW	FISH PASSAGE
TOUCHET RIVER BASIN AND OTHER PROXIMAL SUB-BASINS														
Touchet R. – Moutn to Coppei Cr	○	◒	◒	●	●	○	●	●	●	●	●	●	●	○
Touchet R.- Coppei Cr to Wolf Fork	●	◒	●	●	●	●	◒	●	●	●	○	●	◒	◒
Touchet R above Wolf Fork	◒	◒	◒	●	●	●	◒	●	◒	◒	◒	●	○	◒
Coppei Creek	◒	◒	◒	●	●	●	◒	●	◒	◒	●	●	◒	◒
South Touchete –Mouth to GriffinR.	●	◒	●	●	●	●	●	●	●	●	●	●	●	○
South Touchet above Griffin	○	○	◒	○ LFA reports poor	●	●	●	●	○	●	○	○	○	○
Patit Creek	Streams not included in WRIA 32 HLFA													
Wolf Fork- mouth to Whitney Ck	◒	◒	●	◒	●	●	●	●	○	●	●	●	◒	○
Wolf Fork- Whitney to headwaters	○	○	○	◒	●	●	◒	●	○	◒	◒	○	○	●
Robinson Forrk	○	◒	●	●	◒	◒	◒	●	◒	●	●	○	●	○

○ General Habitat Condition is good (properly functioning)

◒ General Habitat Condition is fair (at-risk)

● General Habitat Condition is poor (not properly functioning)

Table 7.1-5: RAPID HABITAT ASSESSMENT MATRIX – SNAKE RIVER TRIBUTARIES

	HABITAT FORMING PROCESSES			RIPARIAN, FLOODPLAIN AND IN-STREAM CHARACTERISTICS							UPLAND	OTHER		
	STREAM BANK CONDITION	ARTIFICIAL CHANNEL CONSTRAINT	WIDTH/DEPTH RATIO	FLOODPLAIN CONNECTIVITY	IN-STREAM LWD	POOL QUANTITY	POOL QUALITY	OFF CHANNEL HABITAT	WATER TEMP.	RIPARIAN CONDITION	SUBSTRATE EMBED.	SCREENS & DIVERSIONS	DEWATER AND LOW FLOW	FISH PASSAGE
	WHITMAN COUNTY TRIBUTARIES were Not Assessed in the HLFA and are listed here for reference and future assessment													
Steptoe Creek														
Wawawai Creek														
Almota Creek														
Little Almota Creek														
Penawawa Creek														
Alkali Flat Creek														

○ General Habitat Condition is good (properly functioning)

◒ General Habitat Condition is fair (at-risk)

● General Habitat Condition is poor (not properly functioning)

7.2 Habitat Health by Percent

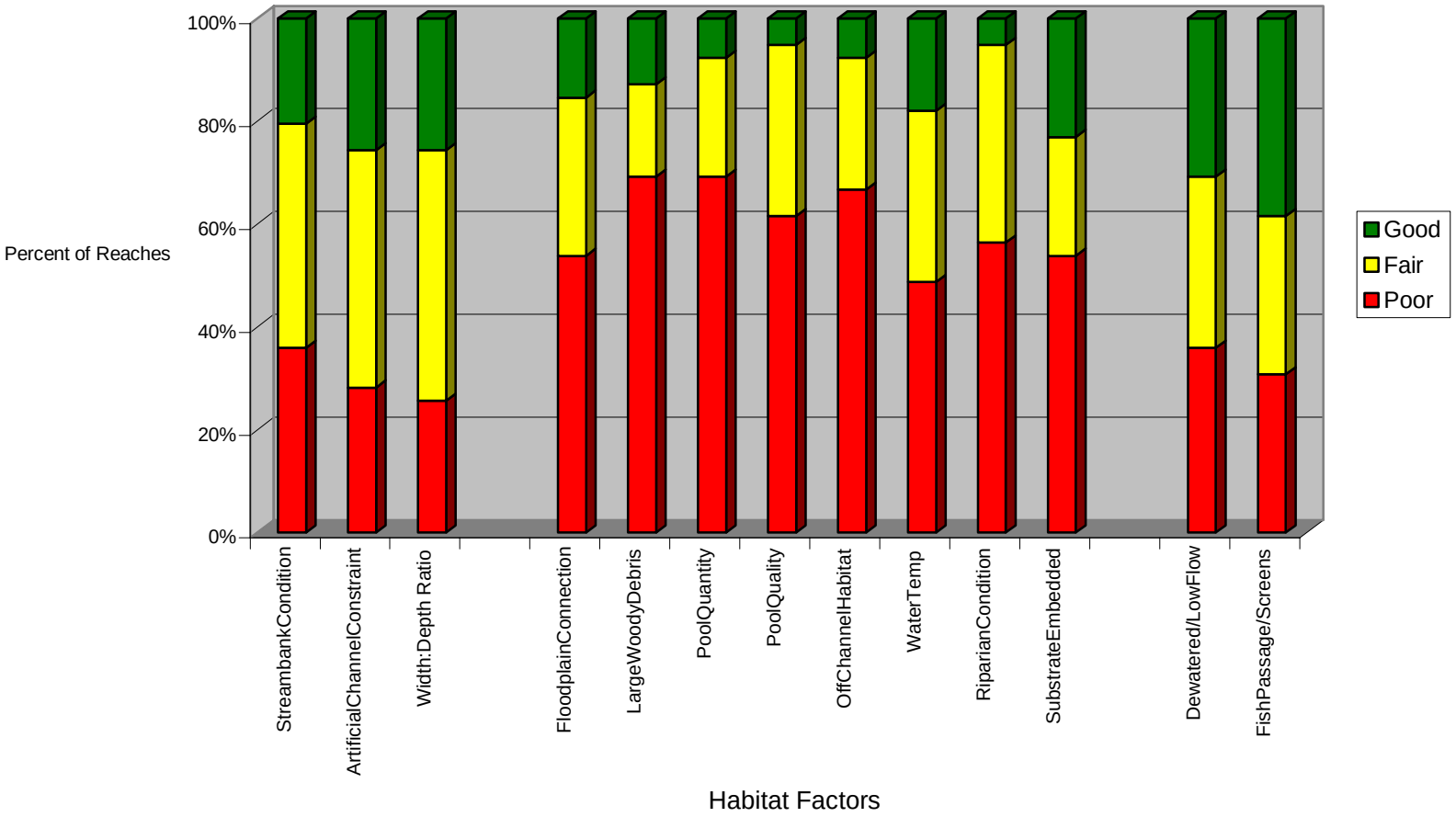


Exhibit 7.2-1: Percent occurrence by rating of 13 habitat variables in 39 streams/reaches throughout the Snake River Salmon Recovery Region

7.3 EDT Ranking for Reaches and Restoration Actions

The EDT model assesses the relative importance of individual stream reaches in a watershed in terms of their contributions to fish abundance, productivity, capacity, and life history diversity (collectively known as population performance). EDT uses stream and riparian habitat characteristics to help determine salmon survival during each life history stage. EDT can help prioritize stream reaches for **preservation** and **restoration**. Reaches are ranked for preservation priorities based on current habitat conditions. High priority preservation reaches will contribute more to population performance than will reaches with a lower preservation rank if not further degraded. Reaches ranked for restoration priorities are based on comparisons between current and historic habitat conditions. If restored to historic conditions, high priority restoration reaches will contribute more to a population's performance than reaches ranked lower in restoration. It is possible for each reach to be ranked as a high priority for both preservation and restoration. These reaches currently contribute a good deal to population performance, and if restored to historic conditions, would contribute more to population performance than other reaches in the basin that could be restored. It is important to note that all reaches are affected by upstream/upslope processes and that habitat condition of a stream reach may be more affected by activities occurring in the watershed than by activities on site. EDT is run for each species individually for both preservation and restoration

Our highest priority is to address imminent threats where ever ESA listed species occur. Imminent threats include unscreened or improperly screened (non compliant) water diversions, fish passage barriers, and stream crossings (fords) when and where fish spawn and eggs are incubating. The second priority is to address habitat factors that are currently impacting productivity in priority reaches as well as the imminent threats wherever ESA-listed species occur. The approach for prioritizing habitat-related projects was to utilize the EDT products as a primary data source but to also use other sources of assessment, like the habitat limiting factors analysis, sub-basin summaries, and watershed plans.

The protocol for defining prioritized reaches, targeted life stage to affect, habitat attributes to address and actions to implement in each reach based on EDT products is described. The conversion from EDT ladder diagrams and associated files was unbiased and is intended to be entirely transparent. The actions necessary to address the impaired habitat attributes will likely vary from location to location due to the unique location and circumstances affecting the habitat attribute. The certainty of the proposed actions will be considered with the resources, local information, technical knowledge, and acceptability of the proposed actions in mind. In nearly every location it is accepted that alternative actions may be available but are either in the experimental form, are locally unacceptable or are cost-prohibitive. The following tables are based purely on the EDT products and do not incorporate other assessments, empirical data or local knowledge.

Steps for Ranking Restoration Reaches and example actions

Step 1. The normalized EDT ladder diagram was used to identify the top reaches based on Change in Productivity with Restoration. Prioritization of reaches based on Change in Productivity was used instead of Change in Abundance or Diversity Index because of the critically low populations of salmon and steelhead in the Region.

Step 2. The top ranked geographic areas (8 geographic areas for the Walla Walla basin and 4 for all other basins except TenMile, where the top three were ranked) were then added to Table 7.3-1 through .3-8.1.

Step 3. Within each of the top ranked reaches, the productivity change for each life stage was used to determine habitat attributes to prioritize. The top three life stages currently experiencing the

greatest impact on survival were prioritized and listed in Table 7.3-1 through 7.3-8.1. for each of the 3 ranked reaches.

Step 4. The habitat attributes that received a moderate, high, or extreme rating for the top three most impacted life stages were then listed on Table 7.3-1 through 7.3-8.1..

Step 5. Actions/needs to address the habitat attributes were then determined by the technical and citizens committee and listed on Table 7.3-1 through 7.3-8.1..

Steps for Ranking Protection Reaches and Example Actions

Step 1. Refer to restoration reaches in Exhibit A & B for highest priority restoration reaches. The protection reaches were established from the EDT ladder diagrams and where the protection reaches were identical to the restoration reaches, the data was used directly from EDT. In a few cases, however, the restoration reaches and protection reaches were not the same. Since the protection reaches that did not align with the restoration reaches were almost in every case, located on public lands and those lands have protective ordinances or management plans established, we deferred to the restoration reach as the area to protect because the ecological response from protective actions generally takes years to decades to be realized. In the interim, restoration actions in these reaches should accelerate a return to a more properly functioning system while the system recovers with the implementation of more protective measures.

Step 2. Action listed in the Tables in Section 7.3 fro each priority reach and the priority actions and priority will be based on project size and term.

Table 7.3-1: Asotin Creek Summer Steelhead Restoration Matrix

STEP1				STEP 2		
Reach	Productivity Change	Life Stage	Rank	Life Stage Impact	Attribute	Species Present (spawning and rearing)
Headgate Dam to the Forks	1.9%	Egg Incubation	A	-13.4	• Channel Stability • Sediment	Spring Chinook Salmon Steelhead Trou
		0 & 1 Age Overwinter	B	-12.9%	• Habitat Diversity • Flow	
		0 Age Rearing	C	-8.8%	• Habitat Diversity • Flow • Temperature[#]	
Lower North Fork, Mouth to South Fork of North Fork	1.4%	Egg Incubation	A	-10.9%	• Sediment • Channel Stability	Spring Chinook Salmon Steelhead Trout Bull Trout
		0 & 1 Age Over Winter	B	-8.0%	• Habitat Diversity	
		0 Age Rearing	C	-6.8%	• Habitat Diversity	
Charley Creek, Mouth to Access Limit	1.3%	Egg Incubation	A	-23.3%	• Channel Stability • Sediment Load	Steelhead Trout
		0 & 1 age over winter	B	-11.3%	• Flow • Habitat Diversity • Key Habitat Quantity	
		0 Age Rearing	C	-10.1%	• Habitat Diversity • Key Habitat Quantity • Flow	
South Fork Asotin Creek	0.9%	Egg Incubation	A	-29.8%	• Channel Stability • Sediment Load	Steelhead Trout
		0 & 1 Age Over Winter	B	-12.2%	• Habitat Diversity	
		1 Age Rearing	C	-11.1%	• Flow • Habitat Diversity	

[#] Temperature in this reach is identified as a habitat attribute limiting juvenile steelhead survival in the HLFA, Sub-basin Summary and is supported by WDFW empirical data.

Table 7.3-1.1: Asotin Creek Summer Steelhead Protection Decision Matrix

Reach	Protection Attribute	Life Stage to Affect	Implementation Action
Lower North Fork (mouth to SF of NF)	All	All	CREP, Conservation Easement, Land Acquisition
Headgate Dam to Forks	All	All	CREP, Conservation Easement, Land Acquisition
Charley Creek	All	All	CREP and Land Management Plans on Public Lands to protect riparian and channel migration zone
South Fork	All	All	CREP and Land Management Plans on Public Lands to protect riparian and channel migration zone

Table 7.3-2: Asotin Creek Spring Chinook Salmon Restoration Decision Matrix

STEP 1:		STEP 2:				
Reach	Productivity Change	Life Stage	Rank	Life Stage Impact	Attribute	Species Present (spawning & rearing)
Boundary of the Town of Asotin to George Creek	8.2%	Egg Incubation	A	-84.5%	• Channel Stability • Sediment Load	None (juvenile SPC and STHD overwinter in this reach and Adult SPC hold prior to spawning)
		0 Age Over Winter	B	-83.0%	• Habitat Diversity • Sediment Load • Key Habitat Quantity	
		Pre Spawn Holding	C	-74.7%	• Habitat Diversity • Key Habitat Quantity	
Headgate Dam upstream to Forks	6.1%	Pre Spawn Holding	A	-39.8%	• Habitat Diversity • Key Habitat Quantity	Spring Chinook Salmon Steelhead Trout
		0 Age Over Winter	B	-30.1%	• Habitat Diversity • Key Habitat Quantity	
		Fry Colonization	C	-18.4%	• Habitat Diversity	
North Fork, Mouth to South fork of north fork	5.9%	0 Age over winter	A	-31.6%	• Habitat Diversity • Key Habitat Quantity	Spring Chinook Salmon Steelhead Trout Bull Trout
		Pre Spawn Holding	B	-21.6%	• Habitat Diversity • Sediment Load • Key Habitat Quantity • Flow	
		Fry Colonization	C	-19.0%	• Channel Stability • Habitat Diversity • Sediment Load • Flow • Food	
Lower South Fork	4.8%	0 Age Over Winter	A	-47.0%	• Habitat Diversity • Key Habitat Quantity	Steelhead Trout (Juvenile SPC rear in this reach)
		Fry Colonization	B	-25.1%	• Channel Stability • Flow • Food • Habitat Diversity • Sediment Load • Key Habitat Quantity	
		Pre Spawn Holding	C	-18.8%	• Habitat Diversity • Key Habitat Quantity	

Table 7.3-2.1: Asotin Creek Spring Chinook Salmon Protection Decision Matrix [verified against reach analysis 1-60-03]

Reach	Protection Attribute	Life Stage to Affect	Implementation Action
Lower North Fork (mouth to SF of NF)	All	All	CREP, Conservation Easement, Land Acquisition
Upper South Fork	All	All	CREP, Conservation Easement, Land Acquisition
Headgate Dam to Forks	All	All	CREP and Land Management Plans on Public Lands to protect riparian and channel migration zone
George Creek to Headgate Dam	All	All	

Table 7.3-3: Tucannon River Summer Steelhead Restoration Decision Matrix

STEP 1		STEP 2				
Reach	Productivity Change	Life Stage	Rank	Life Stage Impact	Attribute	Species Present (spawning & rearing)
TumaLum Creek to Hatchery Dam	2.6%	0 Age Rearing	A	-20.3%	• Flow • Habitat Diversity • Competition • Pathogens5	Spring Chinook Salmon Steelhead Trout
		0 and 1+ Over Winter	B	-14.2%	• Flow • Habitat Diversity • Competition5	
		Fry Colonization	C	-11.6%	• Flow • Habitat Diversity • Channel Stability	
Marengo to TumaLum Creek	2.2%	0 Age Rearing	A	-25.5%	• Flow • Key Habitat Quantity • Competition5 • Pathogens5	Spring Chinook Salmon Steelhead Trout
		0 and 1+ Over Winter	B	-13.5%	• Flow • Sediment • Key Habitat Quantity	
		Fry Colonization	C	10.7%	• Key Habitat Quantity • Flow • Habitat Diversity	
Hatchery Dam to Little Tucannon River	1.9%	0 Age Rearing	A	-21.0%	• Flow • Habitat Diversity • Competition[2] • Pathogens5	Spring Chinook Salmon Steelhead Trout
		0 and 1+ Over Winter	B	-15.8%	• Flow • Habitat Diversity	
		1 Age Rearing	C	-10.8%	• Flow • Habitat Diversity	
Pataha to Marengo	1.3%	0 Age Rearing	A	-27.3%	• Competition • Flow • Habitat Diversity • Key Habitat Quantity • Pathogens	Steelhead Trout
		0 & 1 Age Over Winter	B	-12.8%	• Flow • Habitat Diversity • Sediment Load • Key Habitat Quantity	
		Egg Incubation	C	-12.6%	• Channel Stability • Sediment Load	

[2] Competition and Predation attributes receive a moderate ranking for reaches in or contiguous to a hatchery facility and will not be addressed by the Lead Entity Habitat Protection and Restoration Strategy.

Table 7.3-3.1: Tucannon River Summer Steelhead Protection Decision Matrix

Reach	Protection Attribute	Life Stage to Affect	Implementation Action
TumaLum Creek to Hatchery Dam	All	All	CREP, Conservation Easement, Land Acquisition
Marengo to LumaLum Creek	All	All	CREP, Conservation Easement, Land Acquisition
Little Tucannon to Bear Creek	All	All	CREP and Land Management Plans on Public Lands to protect riparian and channel migration zone
Hatchery Dam to Little Tucannon	All	All	

Table 7.3-4: Tucannon River Spring Chinook Salmon Restoration Decision Matrix

STEP 1		STEP 2				
Reach	Productivity Change	Life Stage	Rank	Life Stage Impact	Attribute	Species Present (spawning & rearing)
TumaLum Creek to Hatchery Dam	7.4%	Pre Spawn Holding	A	-26.7%	• Habitat Diversity • Key Habitat Quantity	Spring Chinook Salmon Steelhead Trout
		0 Age Over Winter	B	-25.4%	• Habitat Diversity • Key Habitat Quantity	
		Fry Colonization	C	-12.9%	• Habitat Diversity • Key Habitat Quantity	
Pataha Creek to Marengo	5.5%	Pre Spawn Holding	A	-29.8%	• Flow • Temperature • Habitat Diversity • Key Habitat Quantity • Pathogens	Steelhead Trout
		0 Age Over Winter	B	-18.4%	• Key Habitat Quantity • Flow • Sediment Load • Habitat Diversity	
		Fry Colonization	C	-11.6%	• Flow • Habitat Diversity • Key Habitat Quantity • Channel Stability • Food	
Marengo to TumaLum	5.1%	Pre Spawn Holding	A	-39.2%	• Habitat Diversity • Temperature • Flow • Key Habitat Quantity	Spring Chinook Salmon Steelhead Trout
		0 Age Over Winter	B	-21.2%	• Habitat Diversity • Key Habitat Quantity	
		Fry Colonization	C	-16.0%	• Flow • Habitat Diversity • Key Habitat Quantity	
Hatchery Dam to Little Tucannon	4.0%	0 Age Over Winter	A	-30.6%	• Habitat Diversity • Key Habitat Quantity	Spring Chinook Salmon Steelhead Trout
		Pre Spawn Holding	B	-22.1%	• Habitat Diversity • Key Habitat Quantity	
		Fry Colonization	C	-14.9%	• Flow • Habitat Diversity • Key Habitat Quantity	

Table 7.3-4.1: Tucannon River Spring Chinook Salmon Protection Decision Matrix

Reach	Protection Attribute	Life Stage to Affect	Implementation Action
Pataha Creek to Marengo	All	All	CREP, Conservation Easement, Land Acquisition
Marengo to Tumalum	All	All	CREP, Conservation Easement, Land Acquisition
TumaLum to Hatchery Dam	All	All	CREP, Conservation Easement, Land Acquisition
Hatchery Dam to Little Tucannon	All	All	Public Land Management Plans

Table 7.3-5: Walla Walla Basin Summer Steelhead Restoration Decision Matrix

STEP 1		STEP 2				
Reach	Productivity Change	Life Stage	Rank	Life Stage Impact	Attribute	Species Present (spawning & rearing)
Walla Walla River, mouth to Touchet River	15.5%	1 age rearing	A		•	Summer rearing unlikely historically occurred in this reach.
Touchet River, mouth to Coppei Creek	0.0%				•	Due to a zero percent change in productivity, this reach was not ranked as a priority reach
Mill Creek, Gose Street to Bennington Dam					•	Concrete Channel with very low likelihood of restoring
Walla Walla River, Touchet to Dry Creek	0.4%	0 & 1 Age Over Winter	A	-99%	• Channel Stability • Flow • Habitat Diversity • Sediment Load	None (juvenile steelhead, spring Chinook and bull trout over-winter in this reach)
		1-Age Rearing	B	-68.3%	• Habitat Diversity • Sediment Load	
		2 Age Rearing	C	-49.7%	• Habitat Diversity • Sediment Load • Key Habitat Quantity	
Walla Walla River, Dry Creek to Mill Creek	0.1%	0 Age Rearing	A	-59.2%	• Flow • Habitat Diversity • Sediment Load • Temperature • Competition# • Predation#	None (juvenile steelhead, spring Chinook and bull trout over-winter in this reach
		0 & 1 Age Over Winter	B	-36.0%	• Channel Stability • Flow • Habitat Diversity • Sediment Load	
		1 Age Rearing	C	-26.3%	• Habitat Diversity • Sediment Load • Flow	
North Fork Touchet River Mainstem	0.0%	Egg incubation	A	-37.3	• Sediment Load • Habitat Diversity	Steelhead Trout Bull Trout
		0-Age Rearing	B	-26.3	• Temperature • Flow • Habitat Diversity	
		0 & 1 Over Winter	C	-15.9%	• Flow • Habitat Diversity	

Table 7.3-5: Walla Walla Basin Summer Steelhead Restoration Decision Matrix (continued)

STEP 1		STEP 2				
Reach	Productivity Change	Life Stage	Rank	Life Stage Impact	Attribute	Species Present (spawning & rearing)
Touchet , Coppei to forks + Whiskey Creek	0.0%	0 Age Rearing	B	-46.5%	• Flow • Habitat Diversity • Temperature	Steelhead Trout
		Egg Incubation	A	-41.2%	• Key Habitat Quantity	
		0 & 1 Age Over-winter	C	-25.0%	• Flow • Channel Stability • Habitat Diversity	
Walla Walla River, Mill Creek to East Little Walla Walla Priority Reach # 2 [	0.1%	0-Age Rearing	A	-64.7%	• Flow • Habitat Diversity • Pathogens# • Sediment • Temperature	None (steelhead, spring Chinook and bull trout over winter rearing and adult holding in this reach)
		0 & 1 Age Over Winter	B	-40.6%	• Channel Stability • Flow • Habitat Diversity • Sediment Load	
		1 Age Rearing	C	-28.6%	• Flow • Habitat Diversity • Sediment Load	
Wolf Fork	0.0%	Egg Incubation	A	-35.4%	• Channel Stability • Sediment • Temperature	Steelhead Trout Bull Trout
		0 - Age Rearing	B	-23.3%	• Habitat Diversity • Sediment • Flow	
		0 & 1 Age Over-winter	C	-17.5%	• Flow • Habitat Diversity	
South Fork Touchet Tribs.	0.0%	Egg Incubation	A	-44.9%	• Sediment • Temperature • Channel Stability	Steelhead Trout Bull Trout
		0 - Age Rearing	B	-20.5%	• Flow • Habitat Diversity	
		0 & 1 Age Over-winter	C	-11.1%	• Channel Stability • Flow • Habitat Diversity	
Coppei Drainage	0.0%	Egg Incubation	A	-62.9%	• Channel Stability • Sediment • Temperature	Steelhead Trout
		O - Age Rearing	B	-33.9%	• Channel Stability • Flow • Habitat Diversity	
		0 & 1 Age Over-winter	C	-27.0%	• Channel Stability • Flow • Habitat Diversity	

Local Knowledge and existing documents strongly suggested that the lower reaches of the Walla Walla and Touchet rivers not be prioritized at this time due to the uncertainty of achieving the objectives. Also, due to the current condition of Mill Creek through the City of Walla Walla, this reach was removed from the ranked EDT priority list for restoration.

Table 7.3-5.1: Walla Walla basin Summer Steelhead Protection Decision Matrix

Reach	Protection Attribute	Life Stage to Affect	Implementation Action
Walla Walla River, Touchet to Dry Creek	All	All	CREP, Conservation Easement, Land Acquisition and Land Management Plans on Public Lands to protect riparian and channel migration zone
Walla Walla River, Dry Creek to Mill Creek	All	All	CREP, Conservation Easement, Land Acquisition and Land Management Plans on Public Lands to protect riparian and channel migration zone
North Fork Touchet Mainstem	All	All	CREP, Conservation Easement, Land Acquisition and Land Management Plans on Public Lands to protect riparian and channel migration zone
Touchet River, Coppei Creek to Forks	All	All	CREP, Conservation Easement, Land Acquisition and Land Management Plans on Public Lands to protect riparian and channel migration zone
Walla Walla River, Mill Creek to East Little Walla Walla	All	All	CREP, Conservation Easement, Land Acquisition and Land Management Plans on Public Lands to protect riparian and channel migration zone
Wolf Fork drainage	All	All	CREP, Conservation Easement, Land Acquisition and Land Management Plans on Public Lands to protect riparian and channel migration zone
South Fork Touchet Mainstem	All	All	CREP, Conservation Easement, Land Acquisition and Land Management Plans on Public Lands to protect riparian and channel migration zone
Coppei Creek drainage	All	All	CREP, Conservation Easement, Land Acquisition and Land Management Plans on Public Lands to protect riparian and channel migration zone

Table 7.3-6: Almota Creek Summer Steelhead Restoration Decision Matrix

STEP 1		STEP 2				
Reach	Productivity Change	Life Stage	Rank	Life Stage Impact	Attribute	Species Present (spawning & rearing)
North Branch Little Almota to access limit at Head Cut	Reported 318.8% but must be incorrect	Egg Incubation	A	-58.6%	• Sediment Load	Steelhead Trout
		0 & 1 Age Over Winter	B	-56.2%	• Channel Stability • Flow • Habitat Diversity • Sediment Load • Key Habitat Quantity	
		0 Age Rearing	C	-30.7%	• Flow • Habitat Diversity • Key Habitat Quantity	
Almota, Mouth to Little Almota Creek	Reported 177.9%	Egg Incubation	A	-61.3%	• Sediment Load	Steelhead Trout
		0 & 1 Age Over Winter	B	-54.9%	• Flow • Habitat Diversity • Sediment Load	
		0 Age Rearing	C	-51.8%	• Flow • Habitat Diversity • Predation	
Little Almota, Head Cut to Culvert	0.0% reported	Egg Incubation	A	-61.5%	• Sediment Load	Steelhead Trout
		0 Age Rearing	B	-36.8%	• Flow • Habitat Diversity • Key Habitat Quantity	
		0 & 1 Age Over Winter	C	-35.7%	• Channel Stability • Flow • Habitat Diversity • Sediment Load • Key Habitat Quantity	
Little Almota, Mouth to Head Cut	Reported 106.6%	Egg Incubation	A	-60.6%	• Sediment Load	Steelhead Trout
		0 Age Rearing	B	-37.0%	• Flow • Habitat Diversity • Key Habitat Quantity	
		0 & 1 Age Over Winter	C	-34.9%	• Channel Stability • Flow • Habitat Diveristy • Sediment Load • Key Habitat Quantity	

Table 7.3-6.1: Almota Summer Steelhead Protection Decision Matrix

Reach	Protection Attribute	Life Stage to Affect	Implementation Action
North Branch, Mouth to Access Limit	All	All	CREP, Conservation Easement, Land Acquisition and Land Management Plans on Public Lands to protect riparian and channel migration zone
Little Almota, Head Cut to Culvert	All	All	CREP, Conservation Easement, Land Acquisition and Land Management Plans on Public Lands to protect riparian and channel migration zone
Little Almota, Mouth to Headcut	All	All	CREP, Conservation Easement, Land Acquisition and Land Management Plans on Public Lands to protect riparian and channel migration zone
Almota Creek, Forks to Access Limit	All	All	CREP, Conservation Easement, Land Acquisition and Land Management Plans on Public Lands to protect riparian and channel migration zone

Table 7.3-7: Deadman Creek Summer Steelhead Restoration Decision Matrix

STEP 1		STEP 2				
Reach	Productivity Change	Life Stage	Rank	Life Stage Impact	Attribute	Species Present (spawning & rearing)
South Fork Deadman, mouth to access limit	294.3%	Egg Incubation	A	-44.9%	• Sediment Load • Channel Stability	Steelhead Trout
		0 Age Rearing	B	-37.2%	• Flow • Habitat Diversity • Sediment Load	
		0 & 1 Age Over Winter	C	-32.9%	• Channel Stability • Flow • Habitat Diversity • Sediment Load	
North Fork Deadman, Intermittent Zone to Access Limit	233.5%	0 & 1 Age Over Winter	A	-45.9%	• Channel Stability • Flow • Habitat Diversity • Sediment Load	Steelhead Trout
		Egg Incubation	B	-45.6%	• Sediment Load • Channel Stability	
		0 Age Rearing	C	-39.9%	• Flow • Habitat Diversity	
Ping, mouth to obstruction at Leonard property	172.2%	0 Age Rearing	A	-56.7%	• Flow • Habitat Diversity • Key Habitat Quantity	Steelhead Trout
		0 & 1 Age Over Winter	B	-52.9%	• Channel Stability • Flow • Habitat Diversity • Sediment Load • Key Habitat Quantity	
		Egg Incubation	C	-50.1%	• Channel Stability • Sediment Load	

Table 7.3-7.1: Deadman Creek Summer Steelhead Protection Decision Matrix

Reach	Protection Attribute	Life Stage to Affect	Implementation Action
South Fork Deadman, mouth to access limit	All	All	CREP, Conservation Easement, Land Acquisition and Land Management Plans on Public Lands to protect riparian and channel migration zone
North Fork Deadman, mouth to access limit	All	All	CREP, Conservation Easement, Land Acquisition and Land Management Plans on Public Lands to protect riparian and channel migration zone
Deadman, Lynn Gulch to confluence of NF and SF Deadman	All	All	CREP, Conservation Easement, Land Acquisition and Land Management Plans on Public Lands to protect riparian and channel migration zone
Deadman Creek, Embayment to Willow Gulch	All	All	CREP, Conservation Easement, Land Acquisition and Land Management Plans on Public Lands to protect riparian and channel migration zone

Table 7.3-8: Ten Mile Creek Summer Steelhead Restoration Decision Matrix

STEP 1		STEP 2				
Reach	Productivity Change	Life Stage	Rank	Life Stage Impact	Habitat Attribute to Address	Species Present (spawning & rearing)
Dewatered Area to Mill Creek	119.5%	Egg Incubation	1	-33.8%	• Sediment Load	Steelhead Trout
		0-Age Active Rearing	2	-22.2%	• Flow • Habitat Diversity	
		0 & 1 Age Over Winter	3	-19.0%	• Sediment Load • Flow • Habitat Diversity	
Mill Creek to Middle Branch	74.4%	Egg Incubation	1	-44.6%	• Sediment Load • Temperature	Steelhead Trout
		0 Age Rearing	2	-21.9%	• Flow • Temperature	
		1 Age Rearing	3	-8.9%	• Flow	
Mouth to Dewatered Area (combined and averaged reaches 1 – 3)	32.5%	Egg Incubation	1	-62.0%	• Sediment Load • Key Habitat Quantity • Temperature	Steelhead Trout
		0 Age Rearing	2	-38.6%	• Habitat Diversity • Flow • Temperature	
		0 & 1 Age Over Winter	3	-28.6%	• Flow • Habitat Diversity	

Table 7.3-8.1: Ten Mile Creek Summer Steelhead Protection Decision Matrix

Reach	Protection Attribute	Life Stage to Affect	Implementation Action
Dewatered area to Mill Creek	All	All	CREP, Conservation Easement, Land Acquisition and Land Management Plans on Public Lands to protect riparian and channel migration zone
Mill Creek to Middle Branch	All	All	CREP, Conservation Easement, Land Acquisition and Land Management Plans on Public Lands to protect riparian and channel migration zone
Mouth to Dewatered area	All	All	CREP, Conservation Easement, Land Acquisition and Land Management Plans on Public Lands to protect riparian and channel migration zone

7.5 Habitat Project Types

Riparian Habitat Projects

Conditions:

Riparian re-vegetation projects will have livestock exclusion or control practices in place prior or simultaneous to project implementation, i.e., a fence will be constructed prior to planting trees if livestock are present.

A mixture of native woody and shrub species will be planted on 5 – 15 foot centers to ensure ecological diversity and mimic natural conditions. Density will be at least 500 stems per acre.

Any project that protects the riparian area is eligible, i.e., livestock fencing, alternative water sources, etc.

Although we prioritize wide riparian habitat projects, we recognize that in some

locations that there are physical constraints limiting projects to less than the desirable riparian width.

Riparian projects implemented in locations of cool water that do not currently have healthy riparian areas are preferred over projects in lower reaches that are already near the temperature threshold for salmonids.

Riparian Habitat Project Benefits:

Riparian buffers set "side boards" between which the river can meander and return to natural functions (LWD recruitment, natural geomorphology, increased pool frequency, side channel development, etc.).

Connectivity between the river and its floodplain.

Cooler water temperatures.

Increased flow as water is retained in the soil profile longer.

Riparian Habitat Project Types:

Livestock water gaps and alternative watering sources

Riparian fencing

Riparian revegetation

Land acquisition

Conservation easement

In-stream Habitat Projects

Conditions:

ESA listed stocks (spring and fall Chinook salmon, and steelhead and bull trout) are equally important and will not be treated preferentially.

The project addresses a limiting factor identified through either a limiting factors analysis, assessment, or through technical review consensus.

Projects with greater temporal longevity and geographic size should be prioritized over shorter lived, smaller projects.

Projects that decrease stream length (straighten the river) are not eligible.

All in-stream habitat projects will be assigned 10-year duration due to contractual obligations and the documented average physical longevity of in-stream habitat projects.

Barrier removal projects that do not open up useable habitat are not eligible. Barrier removal projects need to be sequenced for benefit

Benefits:

Instantaneous in-stream habitat improvement

Increased bank stability and decreased erosion

In-stream habitat project types:

Fish passage barrier removal

In-stream habitat development

Levee removal/setback

Upland Habitat Projects

Conditions:

Sediment entering a perennial, non-fish bearing stream will ultimately affect ESA listed species some location downstream. Therefore an eligible project location must be at, or upstream from an ESA listed species spawning location.

The more distal to a stream that sediment originates the less likely it is to end up in a stream.

Agricultural sediment is a factor limiting salmonid recovery; therefore, any project that reduces agriculturally derived sediment will benefit salmon recovery.

This scorecard will be used for all NRCS identified upland BMP's (direct seed, range management, timber management, grass waterways, sediment ponds, terraces, etc.).

Sponsor will establish maximum allowable acreage.

Upland Habitat Project Benefits:

Greater soil moisture holding capacity which reduces runoff magnitude from tilled soils or rangelands

Reduced erosion due to water infiltration opposed to water runoff

Upland Habitat Project Types

Sediment ponds

Terrace

Grass waterway

Direct seeding

Water conservation Projects

Conditions:

All projects shall transfer water to an in-stream right.

Project sponsors are required to consult with the WDOE regarding water savings prior to submitting their proposal.

Water savings shall be expressed in terms of the amount of water that will be in-stream, not just the amount conserved on-farm.

The specific time that the water will be returned in-stream shall be provided.

Projects that result less water diverted will be prioritized over projects that increase irrigation return to the stream.

Benefits

Passage to up-stream habitats.

Cooler water temperature.

Hyporheic recharge.

Groundwater/surface water connectivity.

Water conservation project types:

Surface water right acquisition or lease.

Hydraulically connected ground water acquisition or lease

On Farm irrigation efficiency projects

Water delivery efficiency projects

Alternative crop development projects.

Study and Assessment Projects

Conditions:

Project will target ESA-listed species and be focused on filling a documented data gap

Project will be two years or less in duration.

Project will result in a document that will guide future projects.

Project will fill critical data gap.

Benefits

Provides information necessary for adaptive management

Identifies critical unknowns and fills data gaps

Study and Assessment project types:

Bull trout radio telemetry to determine winter habitat use and possible migration barriers

Salmonid distribution and abundance in reaches/streams

that have not been assessed

Other

7.6 Questions to Guide LE Strategy Development

5. What is your vision (10-30 years out) and short and long-term goals for your watershed in relation to salmon habitat recovery? What is the gap between current and desired conditions?

Our vision is to have productive, protected habitat conditions throughout all watersheds in the Region currently containing salmonid species.

Our short-term goals are (1) to immediately address factors currently directly affecting salmon survival (fish passage barriers, pump screens, fords, de-watering, etc) and (2) to continue working towards restoring and protecting the riparian and in-stream habitat throughout the watershed. More specifically, the first short-term goal is to remove all fish passage barriers, and gavel push-up berms, and screen all irrigation withdrawals while the second short-term goal is to restore channel conditions to stable, naturally functioning forms and restore and protect the riparian areas throughout the watershed. This combination of active restoration and long-term passive protection will provide immediate benefits and long-term sustainability of properly functioning habitat conditions.

Our long-term goal is to achieve measurable objectives of (1) an annual increase in riparian restoration and protection (2) an annual increase in restoration and implementation of best management practices in the uplands to reduce sediment production and increase water infiltration, (3)

There is a fiscal gap between current and future desired conditions as evidenced by 1) landowners and local government land use planners expressing and showing a willingness to restore and protect stream channels and uplands, and 2) backlog of participants on CREP list and those wishing to enroll in direct-seed and other upland BMP's.

6. What is your definition of recovery and how does it relate to the State and Federal definitions?

Our definition of salmon recovery in the Snake River Region is in draft form but currently is: "Sustained population abundance and spatial distribution levels sufficient to provide harvestable levels of salmon while maintaining the ecological and genetic fitness of naturally produced populations". The definition is based on (1) properly functioning habitat conditions within watersheds in our Region, (2) incremental increases of adult to smolt (freshwater) survival indices until the population can support harvest, and (3) continued importance of salmon in community values and actions. Our definition relates to both the state and federal definitions in that it addresses 1) habitat upon which the fish depend, 2) fish productivity and 3) allowable harvest.

Federal Definition:

Interim recovery objectives have been released and are to be considered as general guidance from NOAA Fisheries only. The Interior Columbia Technincal Recovery Team (TRT) is currently developing Salmon recovery objectives for listed stocks within the Snake River Region. These TRT efforts are referred to as Phase One by the recovery plan guidance for West Coast Salmon (from www.nwfsc.org). Phase Two will be the development of policy concerning recovery goals and action based on the technical foundation provided under Phase one. "It is important to note that these interim abundance and productivity targets make no particular assumptions regarding harvest or any other take of fish in a listed ESU. These are intended to represent the number and productivity of naturally-produced spawners that may be needed for recovery, in context of whatever take or mortality is occurring. NMFS (now known as NOAA Fisheries) intends that the final recovery goals developed in Phase Two will include harvest sufficient to meet our treaty and trust responsibilities and fulfill our mission of sustainable fisheries." (quoted from Bob Lohn, NOAA Fisheries letter to Frank L. Cassiday, Jr., Chairman, Northwest Power Planning Council).

State Definition:

"Restore salmon, steelhead and trout populations to healthy and harvestable levels and improve habitat upon which fish rely."[3]

7. What is your conceptual approach or recovery philosophy and why did you choose it? (e.g. refugia/landscape ecology, worst first/triage, start where there's greatest support, etc.)

Our recovery philosophy has evolved from working in degraded areas containing ESA listed fish species where there was greatest support and opportunity to restore, to today, where we utilize newly available information from HLFA, and other documents to help guide priority actions and priority areas (strategic). Our philosophy is that priority actions are those that address the key limiting factors in areas where ESA listed species spawn and rear. In areas where human impacts are unlikely to directly impact salmonid habitat, the priorty is to protect these areas from any possible future impacts. In areas where human impacts are likely to occur, these impacts must be incorportated into the habitat protection/restoration philosophy. In these generally urban areas or small reaches of rural areas (near a house, bridge, or in a confined canyon), our approach has been to maximize benefits to fish while minimizing impacts to infrastructure and people.

8. What are your high priority stocks, geographical areas, and actions? What process and criteria did you use to determine them?

All ESA listed stocks are equally high priority, with no stock prioritized over any other stock. Our highest geographic area is where fish spawn and rear, with all streams containing spawning and rearing ESA listed fish being equal. Highest priority actions are those that result in immediate benefit to fish survival (fish screens and removal of fish passage barriers). The next highest priority action focuses on projects that address the greatest number of limiting factors; i.e., riparian protection and restoration projects addressing stream channel migration, water temperature, sediment, LWD recruitment potential, and naturally forming stream channel processes, all of which are identified limiting factors.

The process used to determine the priority stocks was a discussion among citizens and technical members of our lead entity committee. The discussion resulted in all ESA listed stocks being of equal importance.

The process used to determine priority geographical areas was an evaluation of the potential gain from projects located in areas where the fish spend critical portions of their life while in the freshwater environment. This evaluation resulted in the conclusion that projects benefiting fish in locations where they both spawn and rear are more important than projects in passage corridors or un-inhabited tributaries. The caveat to this general evaluation was for projects that remedy conditions that are directly affecting fish survival (fish passage barriers, pump screens, dewatered reaches, etc).

The process used to determine the appropriate actions to remediate watershed conditions has been a combination of funding availability and eligibility and the tools currently available. For example, actions necessary to reduce sediment production and delivery to a stream will differ depending on proximity to a stream, i.e., CREP is used near the stream while direct seeding or upland best management practices are applied further from a stream. These project actions are conditioned and are not eligible everywhere. Actions to address channel conditions are determined by scientific methods using Rosgen's principles contained in Applied River Morphology, Stream Channel Restoration guidelines and protocols developed by the Natural Resource Conservation Service.

9. What segments of the community and stakeholder groups were or need to be involved in developing your strategy?

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[3] From the "Statewide Strategy to Recover Salmon, Extinction Is Not [3]an Option", published by the State of Washington Governor's Salmon Recovery Office.

Representatives from agriculture, municipal, environmental, Tribal, state and federal agencies, landowners and enhancement groups were involved in development of our habitat protection and restoration strategy.

10. What are the social, economic forces and scientific knowledge that limit or support your vision and goals? How will you address limiting forces and strengthen supportive forces, where needed? How will you address and integrate socio-economic and scientific factors?

Social limitations include the public's lack of understanding that salmon are an indicator of the health of our watersheds. It is important to convey the message that salmon recovery is important for regulatory, cultural and recreational reasons but also that "doing good things for salmon" will result in healthier watersheds which is good for people.

There are two economic forces at work (1) economic impacts to landowners who are affected by changes in existing land practices necessary to restore and protect salmonid habitat , and (2) funding to implement changes in those land practices

There is a general scientific understanding of the habitat conditions, processes, and key limiting factors in the region. Reach-specific diagnosis and subsequent prescribed treatments are lacking.

We are currently working to strengthen the breadth and availability of scientific data in the Region by developing a regional data management system that will mine historic data and accept current and future data. All data will be assigned a GPS coordinate and cause-effect relationships can easily be developed as well as more rigorous ecosystem and diagnosis treatment modeling. These types of scientific analysis are nearly impossible due to the disparate data types, sources and formats. We are also working to change social acceptance of salmon as indicators of the quality of the world we inhabit. To that end, we have been engaged in watershed symposium and forum (Watershed Planning, HCP and Sub-basin planning) where the notion of salmon as indicators is becoming more understood and accepted. As people embrace salmon as indicators of the health of the world around them, restoring salmon will gain support and people's day-to-day lives will include consideration for salmon and the watersheds.

11. What are the technical and citizen's groups' roles in your strategy?

Both groups have the same role, which is to provide objective insight into current conditions, factors for decline, strategies for restoration and protection, and ranking projects that fit the social and scientific needs of the region.

12. How will you foster and encourage project sponsors to participate in your high priority actions?

Our Recovery Strategy identifies the type of projects and priority areas for project sponsors to focus their project proposals towards. We use the Strategy for this purpose.

13. How does your strategy integrate with other existing policies, programs and regulations that can have a significant effect on salmon recovery?

Our Strategy identifies regulations associated with growth management, critical areas ordinance, and shoreline protection guidelines necessary for protection of the critical riparian and channel migration zone. These policies and regulations are relied upon to protect the riparian areas, floodplain and channel migration zone from future degradation. However, in areas where infringement on the riparian areas has occurred we use the Strategy as a tool to identify priority areas to implement restoration projects in the riparian areas.

14. What tools and resources did you/will you use to help implement your strategy? (e.g. GIS, habitat biology, senior planner, web specialist, etc.)

Project identification and selection was a result of the principles and actions defined in the Strategy. The Strategy defined limiting factors at the reach level so that potential project sponsors could gauge the relative benefit of their project to salmon. If project sponsors believed that their project would benefit salmon, they were encouraged to submit an application. Natural Resource Agency experts and citizens were called upon to review project proposals in conjunction with the proponents to help refine the proposals to maximize benefits to fish. Specifically, the protocol just described was the key tool and the participants were the resources used in implementing the strategy.

15. How will you measure progress and success? What are your measurement criteria?

This is a challenging question, as we believe the progress towards recovering salmon can't be measured in the number of fish, but rather is a combined measurement that includes a measure of fish productivity and community support and understanding. Progress may be measured in the number of project proponents, project diversity and changes in land use policy. Currently, progress is measured in the quantity of habitat enhancements, i.e., number of pools constructed, miles of streambank protected, number of acres in conservation practices, etc.

16. How will you use your strategy beyond soliciting SRFB funding?

Our goal is to develop a Regional Salmon Recovery Plan and use the Strategy as the foundation for the Habitat protection and restoration section of the Plan. We also use the Strategy to identify projects that target BPA, RFEG, Tribal, and other funding sources.